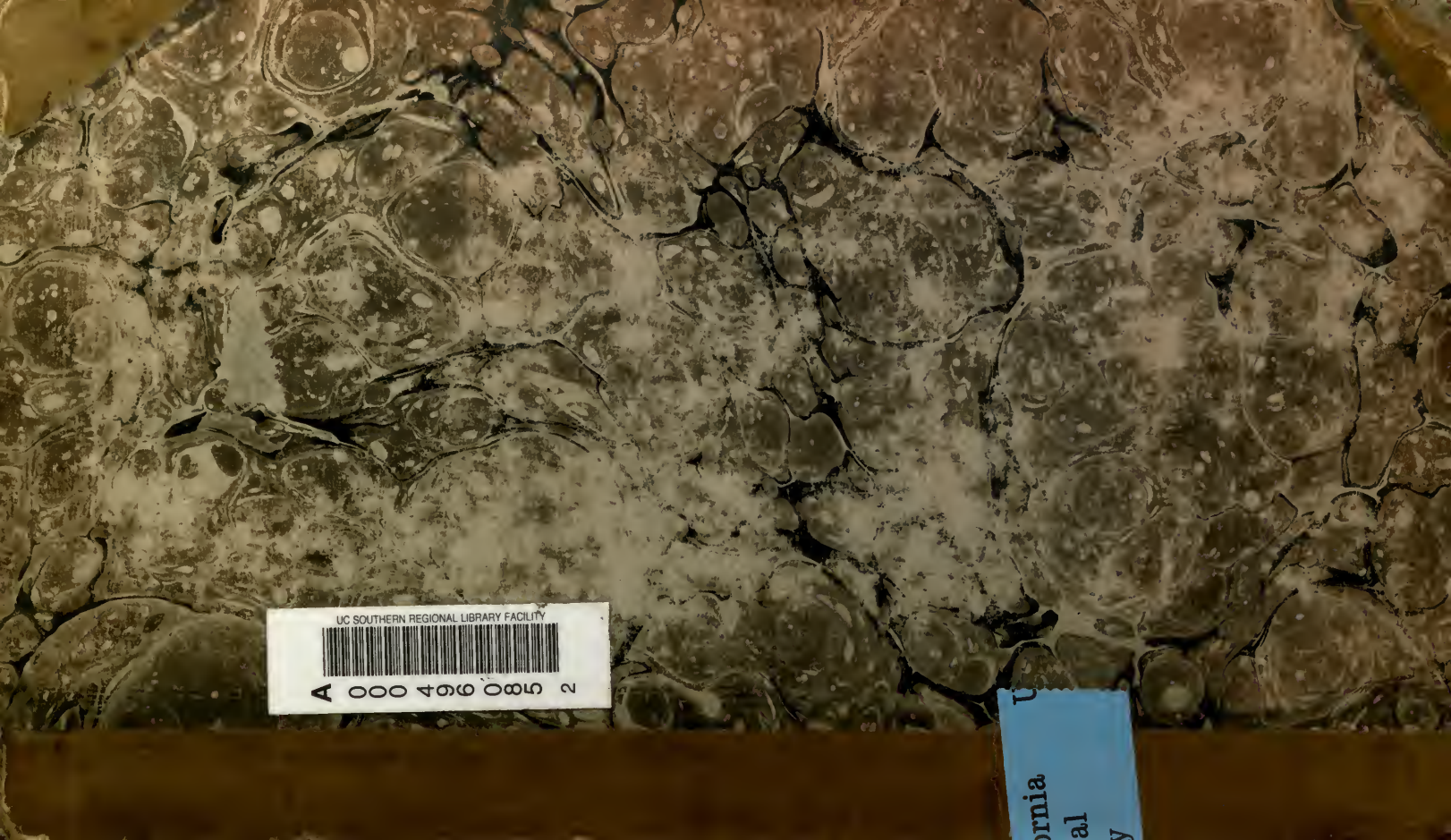

UC SOUTHERN REGIONAL LIBRARY FACILITY
A 000 496 085 2

Hen.ry Gore Clough. M. D. F. A. S.

UCSB LIBRARY
X-24862

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/naturalhistoryof03buffiala

BUFFON's

NATURAL HISTORY

OF

OVIPAROUS QUADRUPEDS

AND

SERPENTS.

VOL. III.

THE

NATURAL HISTORY

OF

OVIPAROUS QUADRUPEDS

AND

SERPENTS.

ARRANGED AND PUBLISHED FROM THE PAPERS AND COLLECTIONS OF THE

COUNT DE BUFFON,

BY THE

COUNT DE LA CEPEDE,

KEEPER OF THE ROYAL CABINET, AND MEMBER OF THE ACADEMIES AND SOCIETIES OF DIJON, LYONS, BOURDEAUX, ROME, STOCKHOLM, &c. &c.

IN FOUR VOLUMES,

ILLUSTRATED WITH COPPERPLATES.

TRANSLATED BY

ROBERT KERR, F.R.&A.S.S.Ed.

VOL. III.

EDINBURGH:

FRINTED BY ALEX. SMELLIE,

FOR T. CADELL, JUN. AND W. DAVIES, LONDON;
AND W. CREECH, EDINBURGH.

1802.

CONTENTS

OF THE THIRD VOLUME.

Preliminary Discourse on the Nature of Serpents in general, page 1

NOMENCLATURE, AND ARRANGEMENT OF SERPENTS, 83

FIRST GENUS.—HAVING LARGE SINGLE PLATES ON THE UNDER SURFACES OF THEIR BODIES, AND PAIRS OF SMALLER PLATES ON THE UNDER SURFACES OF THEIR TAILS, 106

Vipers, - - - 107

SECOND GENUS.—HAVING LARGE PLATES ON THE WHOLE UNDER SIDE OF THE BODY, BOTH ABOVE AND BELOW THE VENT, - - 152

Boa, - - - 153

THIRD GENUS.—HAVING LARGE PLATES ON THE BELLY; THEIR TAILS BEING TERMINATED BY A LARGE SCALEY APPENDAGE, OR BY HORNY PROCESSES WHICH ARTICULATE INTO EACH OTHER, BEING MOVEABLE SO AS TO RATTLE, p. 158

Rattlesnakes, - - 159

FOURTH GENUS.—HAVING THE BELLY AND UNDER SURFACE OF THE TAIL COVERED BY SCALES LIKE THOSE ON THE BACK, - 162

Snakes, - - - 163

FIFTH GENUS.—HAVING THE BODY AND TAIL SURROUNDED BY RINGS OF SCALES, - - - 168

Amphisbaena, - - 169

SIXTH GENUS.—HAVING A LONGITUDINAL ROW OF FOLDS ON EACH SIDE, - - - - 170

Caecilia, - - - 171

SEVENTH

SEVENTH GENUS.—HAVING LARGE PLATES ON THE BELLY NEAR THE HEAD, AND RINGS OF SCALES TOWARDS THE VENT; THE END OF THE TAIL BEING COVERED UNDERNEATH WITH SMALL SCALES, - page 172

Langaha, - - - 173

EIGHTH GENUS.—HAVING THE BODY AND TAIL COVERED BY SMALL TUBERCLES, - - - - 172

Acrochord, - - - 173

FIRST GENUS.

VIPERS.—HAVING LARGE PLATES ON THE UNDER SURFACE OF THE BODY, AND PAIRS OF SMALLER PLATES ON THE UNDER SURFACE OF THE TAIL, - - - - 174

I. SUBDIVISION.

VIPAROUS VIPERS,—OR VIPERS WHICH PRODUCE THEIR YOUNG COMPLETELY FORMED, - page 175

Sp. I. *Common Viper*, - - - *ib.*
II. *Æsping*, - - - 239
III. *Aspic*, - - - 243
IV. *Black Viper*, - - - 246
V. *Melanis*, - - - 249
VI. *Scythian Viper*, - - - 250
VII. *Egyptian Viper*, - - 251
VIII. *Ammodytes*, - - 256
IX. *Ceraſtes*, - - - 261
X. *Naja*, - - - 273
XI. *Peruvian Viper*, - - 299
XII. *Braſilian Viper*, - - 300
XIII. *Lebetin*, - - - 301
XIV. *Hebrew Viper*, - - 303
XV. *Chaiqua*, - - - 305

page

Sp. XVI. *Milky Viper*, - - 306
XVII. *Coralline*, - - 308
XVIII. *Fierce Viper*, - - 310
XIX. *Bloody Viper*, - - 311
XX. *Snowy Viper*, - - 314
XXI. *Braſilian Viper*, - - 315
XXII. *Lance-ſhaped Viper*, - 317
XXIII. *Triangle-headed Viper*, - 330
XXIV. *Dipſas*, - - - 331
XXV. *Atropos*, - - - 332
XXVI. *Leberis*, - - 333
XXVII. *Tigrine*, - - 334

II. SUBDIVISION.

OVIPAROUS VIPERS,—OR VIPERS WHICH PRODUCE EGGS, FROM WHICH THEIR YOUNG ARE AFTERWARDS HATCHED, - - 335

page

Sp. XXVIII. *Green-and-Yellow Viper*, 335
XXIX. *Collared Viper*, - 346
XXX. *Smooth Viper*, - - 357
XXXI. *Four Stripe Viper*, - 362
XXXII. *Roman Viper*, - 363
XXXIII. *Violet Viper*, - 371
XXXIV. *Half-collar Viper*, - 372
XXXV. *Lutrix*, - - 374
XXXVI. *Bali*, - - 375
XXXVII. *Lady Viper*, - 377
XXXVIII. *Chubby Viper*, - 381
XXXIX. *White Viper*, - 382

NATURAL HISTORY

OF

SERPENTS.

DISCOURSE ON THE NATURE OF SERPENTS IN GENERAL.

Preliminary Diſcourſe.

AFTER contemplating the numerous ſpecies of quadrupeds, birds, and oviparous quadrupeds, the claſs of ſerpents come next in order, to complete the Syſtem of Natural Hiſtory which we have undertaken. At firſt ſight, the animals of this claſs ſeem altogether deſtitute of means for ſhifting their ſituations, as if deſtined by Nature to continue during their whole lives in the ſame places where they have received their beings; yet few animals are ſo nimble as they, or can tranſport themſelves from place to place with equal agi-

Preliminary Diſcourſe.

lity. Whether in ſeizing its prey, or in eſcaping from danger, the ſerpent moves almoſt with the rapidity of an arrow; and, on theſe occaſions, every joint of its body ſeems to become the fulcrum of a ſpring, which unbends with violence and velocity; it appears to touch the ground only to rebound from it; and, as if aſſiſted in its courſe by the elaſticity of every thing it touches, it ſeems to ſwim ſwiftly through the air, merely ſkimming along the ſurface of the earth. It emulates, or even ſurpaſſes, ſeveral ſpecies of birds, in the eaſe and rapidity with which it gains the ſummits of the higheſt trees; twiſting and untwiſting its flexible body around their trunks and branches with ſuch aſtoniſhing nimbleneſs, that the ſharpeſt eye follows its motions with difficulty. At other times, when agitated by fear, anger, or deſire, without changing its ſituation, but only making ready to ſpring, it ſwiftly raiſes its head and the fore part of its body into an upright poſture, applying only its tail, bent into ſeveral ſpiral folds, to the ground,

and,

and, far from ſeeming condemned only to crawl upon the earth, it aſſumes the appearance of ſtrength and courage, and even the aſpect of command.

The ſerpent is arranged by Nature immediately after oviparous quadrupeds, reſembling a lizard which has been deprived of its legs, and may eaſily be confounded with the ſeps and chalcides, or with the biped reptiles which we have deſcribed immediately after the tailleſs oviparous quadrupeds. It forms a link of connection between the claſs of oviparous quadrupeds and that of fiſhes, having conſiderable reſemblance to ſeveral ſpecies of the latter, particularly of the eel and gymnotus genera.

Even when gliding with the greateſt velocity along the ground, ſeveral points of its body reſt on the ſurface, which it ſeems ſcarcely to touch, and from which it has no members whatever to bear it up. For this reaſon, the term *reptile* ought excluſively to be applied to the animals of this claſs, the general name of which, *ſerpent*,

Preliminary Discourse.

is derived from *ſerpere*, which ſignifies to crawl. This external form, totally deſtitute of legs, and arms, and every other member of motion, conſtitutes a very diſtinct eſſential character, which cannot be confounded with that of any other animal poſſeſſing blood: Even eels, and other fiſhes which come neareſt to ſerpents in external form, are diſtinguiſhed by means of fins, that are more or leſs numerous or apparent in different ſpecies. Thus, notwithſtanding the near reſemblance of ſerpents to ſeveral other orders or claſſes of animals, the limits of this claſs are extremely diſtinct and well defined. The ſpecies, however, are very numerous, inſomuch that we ſhall have occaſion to deſcribe above a hundred and forty in the courſe of this work. Some of theſe are very minute, ſcarcely reaching a few inches in length, while others are of enormous ſize, extending to thirty, forty, and even fifty feet long *. All of them are covered by ſcales or

* Natural Hiſtory of Serpents, by Charles Owen, printed

or ſcaly tubercles, like lizards and fiſhes, which they unite in the chain of Nature; but theſe ſcales vary conſiderably in ſize and form in the different ſpecies. Some of theſe, named ſhields *ſcutae*, are long, narrow, and hexagonal; while others, called particularly ſcales *ſquamae*, are almoſt round, oval, rhomboidal, or ſquare: The latter are moſtly furniſhed with a prominent ridge, while the former are uſually quite flat and ſmooth. Theſe different kinds of ſcales are variouſly arranged in the ſeveral ſpecies of ſerpents; ſome of which have four diſtinct kinds, ſome three, ſome two, and ſome only one: And we have been chiefly enabled to diſtinguiſh both the genera and ſpecies of ſerpents from each other, by attentively conſidering the form, number, and poſition, of theſe different kinds of ſcales; as may be diſtinctly obſerved, by conſulting the ſyſ-

 tematic

printed at London in 1742.—MS. communications from M. de la Borde and the Baron de Widerſpach, correſpondents with the Royal Cabinet from Cayenne.

Preliminary Discourse.

tematic table and nomenclature of the class, which follows this preliminary discourse.

Before considering the nature and habits of these reptiles, if we take a cursory view of their internal organization, beginning with that of the head, it may be observed that its brain-case or skull is constructed in some measure like that of the oviparous quadrupeds: The hinder portion, however, which answers to the occipital bone of viviparous quadrupeds, and which is of a triangular shape, with the apex turned backwards, does not reach so far back as in oviparous quadrupeds, so as scarcely to defend the origin of the spinal marrow; from which circumstance serpents are extremely vulnerable, and easily killed by blows upon that part of the head. The rest of the skeleton has very strong resemblance to that of fishes; but has a structure quite particular, by which alone these animals might be distinguished from all others as easily as by their external form, being simpler than that of all other sanguineous animals: For it is not divided into particular

cular branches or compartments, for giving origin to external members, as legs, wings, or fins, which are all totally wanting in this claſs. The ſpine is compoſed of an uniform chain of vertebræ, from behind the head to the extremity of the tail. The apophyſes, or proceſſes of theſe vertebræ, in moſt of the ſpecies, are ſo formed and arranged, as to admit of motion in every direction; allowing the animal to twiſt and turn to every ſide, and even to double its body ſeveral times upon itſelf. In almoſt every ſpecies the vertebræ are extremely moveable on each other, the hinder proceſs of each being globular, and received into a cavity or ſocket in the fore part of the next ſucceeding bone, in which it plays with great freedom, forming that ſpecies of joint termed ball and ſocket, which is particularly obſervable in the great rattle-ſnake, or boiquira *. The ribs are fixed to each ſide of theſe vertebræ, in ſuch a manner as to allow of every kind of motion with great

* See that article in this work; and conſult the Philoſophical Tranſactions, No. 144.

Preliminary discourse.

readineſs; and theſe are uſually longeſt towards the middle of the body. Near the end of the tail, the ribs are diſcontinued, and the vertebrae are only provided with lateral proceſſes. We have endeavoured to aſcertain, whether the numbers of the vertebrae and ribs, had any conſtant proportion in the various ſpecies of ſerpents, and for that purpoſe have repeatedly diſſected ſeveral individuals in different ſpecies. We have learned by that inveſtigation, at leaſt in the viper, boa, and rattle-ſnake, that the vertebrae and ribs correſponded in number with the ſhields or plates on the under ſide of their bodies, there being uniformly one vertebra, and two ribs for each ſhield. Our obſervations have not, however, been ſufficiently extenſive, to pronounce, with certainty, that this proportion is conſtant and univerſal. In the ſubſequent article, on the arrangement and nomenclature of ſerpents, our ideas reſpecting the connection between the number of theſe plates, with the age, ſex, and other circumſtances, will be detailed.

The

Preliminary discourse.

The whole bony ſtructure, or ſkeleton, of the bodies of ſerpents is compoſed, beſides the head, of theſe vertebrae and ribs; ſo that their internal organs have no defence on the under parts of the body, except the plates or large tranſverſely lengthened ſcales on that part of their bodies. Beſides theſe, there is uſually a conſiderable quantity of fat between the ſkin of the belly and the viſcera; which ſerves both to protect theſe againſt external injuries, to keep up the internal heat, and to poſtpone the period of torpor or hybernation to which ſerpents are liable in ſome countries; being ſo much the more uſeful for theſe purpoſes, that the natural warmth of their blood is very inconſiderable, and its motion greatly ſlower than in viviparous quadrupeds and birds. In the whole of this claſs, as well as in that of oviparous quadrupeds, the heart is ſingle, having only one auricle and one ventricle: In ſeveral ſpecies of ſerpents, and likewiſe of oviparous quadrupeds, the auricle has the appearance of being double; but in the whole of both claſſes the

Preliminary discourse.

the ventricle is always ſingle, and the circulation is equally ſimple, being totally independent of the motion of the lungs, which warms and accelerates the blood of viviparous animals and birds. As, from this conformation, the action of the heart would not be retarded by even a conſiderable continuance under water, ſerpents might remain habitually, like fiſhes, in that element, were not air neceſſary for ſupporting the energy and vitality of their blood, as in oviparous quadrupeds, and for diſengaging from that fluid, the ſuperabundance of ſuch principles as derange, vitiate, or injure in various ways its qualities, or communicate fluidity or ſome other property requiſite to its health and vigour *. Owing to theſe circumſtances, ſerpents are unable to remain long under water, but are obliged to come frequently to the ſurface, reſpiration being almoſt as neceſſary to them as if their hearts were conſtructed in the ſame manner with thoſe of man, and of viviparous quadrupeds,

* See preliminary diſcourſe on the nature of oviparous quadrupeds, Vol. I. of this work.

quadrupeds, though their circulation is capable of continuing without the assistance of respiration. Their respiration, however, is not so regular and frequent as in viviparous quadrupeds and birds; for, instead of filling and emptying their lungs regularly and quickly, as in these classes, they generally inspire quickly, and expire, or allow the air to escape, very slowly; and are able to subsist the easier with a tardy respiration, that their lungs, as in tortoises, crocodiles, frogs, and other oviparous quadrupeds, are very large in proportion to the size of their bodies, by which they can inspire a very large supply of fresh air at one time. According to the anatomical observations of Ed. Tyson *, the lungs of some species, such as the great rattlesnake, are three-fourths of the total length of the body. Preliminary discourse.

These animals have almost as complete an apparatus of viscera, as in the most perfectly organised classes: Having an esophagus, or gullet, which is very long and extremely distensile, a stomach, a liver with its

* Philosoph. Transact. No. 144.

Preliminary discourse.

its ducts and gall bladder, a kind of pancreas, and long contorted inteſtines; theſe laſt, in their circuitous direction, in their various ſizes, and in the kinds of tranſverſe ſeparations or diſtinctions, are extremely analogous to the ſmall and great guts of viviparous quadrupeds, and are ſimilarly terminated by a ſtraight rectum. They have two kidneys, which diſcharge their ſecreted fluid through ureters into the rectum, or common cloacum, as in birds, without the intermediation of any urinary bladder. This cloacum, or common receptacle of excretions, has but one external opening, and contains the male organ, which remains there concealed until the time of intercourſe; and into it, in the females, the orifices of the two ovaries open: Hence, except in a few ſingular inſtances, which occur about the period of the ſexual union, the ſex of moſt ſerpents cannot be aſcertained by external form.

Moſt of the ſcales, and particularly the large plates on the inferior ſurface of the bodies of ſerpents, are moveable independent

dent of each other, and can be erected or lowered at pleaſure, by means of particular muſcles or fibres that terminate at each ſcale and plate: Thus all of theſe ſcales, and more eſpecially the ventral plates, become ſo many feet, by means of which theſe animals are capable of fixing themſelves to the ground, or to any other ſurface, ſo as to move themſelves in any required direction. They are, however, poſſeſſed of another and more powerful means of progreſſive motion; by raiſing a longer or ſhorter portion of the body into an arc of a circle, drawing the two extremities of that arc near to each other; and fixing one or other extremity to the ground, they flatten the arc, and puſh forward the other extremity; thus advancing or retracting at pleaſure; and, performing this alternate motion with vaſt agility, they move forwards or backwards with great ſwiftneſs. Each time of performing this action, they advance or retreat ſo much diſtance as equals the portion of the body which has been formed into a circular arc, beſides the

Preliminary Diſcourſe.

leap

Preliminary Discourse.

leap or ſpring which takes place when they reſtore the ſtraight form of their bodies, which they do with great force and elaſticity. Theſe arcs are more or leſs raiſed, and more or leſs numerous, in each individual, in proportion to its ſpecies, ſize, and ſtrength, and according to the neceſſity it may be under of moving quickly or ſlowly: And all theſe arcs, as they are ſucceſſively reduced, produce that ſpecies of motion uſually called vermicular, from its being the mode in which worms, *vermes*, that are equally deſtitute of feet with ſerpents, are obliged to change their place, or to move backwards and forwards.

While performing this vermicular motion, ſerpents always carry their heads raiſed up from the ground, higher or lower in proportion to their vigour at the time, or according as they are more or leſs animated by different ſenſations of rage, eagerneſs, or deſire. As the head is articulated in a ſtraight line with the back, admitting of viſion at a right angle to that direction, a ſerpent would be unable either to uſe its mouth

mouth or to ſee its way if the head were raiſed directly upwards; wherefore, in this raiſed poſture, a part of the body is raiſed along with it, and bent forward horizontally, ſo as to give the head its requiſite poſture.

All parts of their bodies are poſſeſſed of great force, agility, and elaſticity, but in moſt ſpecies theſe properties are not equally diſtributed to every part; ſo that moſt ſpecies can advance much faſter than they are able to retreat. Beſides, the plates on the under parts, being arranged like tiles, their fore edges being each covered by the hinder edge of the one immediately before, theſe plates become ſo many obſtacles, eſpecially when erected, to the retreating motion, while on the contrary they aſſiſt ſtrongly in advancing, by exerting themſelves to recover their natural flat ſituation. Some ſpecies, however, which are almoſt equally thick at both ends of the body, and which are covered by circular rings of ſcales, inſtead of plates, ſeem able to move both

Prelimi-
nary Dif-
courſe.

both ways with equal readineſs; but theſe ſpecies are few in proportion to the others.

Some ſerpents, when inclined to ſpring at once from one part to another, or to ſeize their prey by one ſudden leap, inſtead of moving in the progreſſive vermicular manner juſt deſcribed, roll themſelves up into a ſpiral form, inſtead of the ſucceſſive arcs uſed for producing the vermicular motion. In this poſture, hardly any more than the head is raiſed above the flat ſpiral; every part of the body at once is ſtrained into its fulleſt power of elaſticity, and, ſuddenly throwing the body perfectly ſtraight, they ſhoot forward with the ſwiftneſs of an arrow, often clearing ſeveral feet at one bound.

Such ſerpents as climb on trees, fix themſelves by winding their bodies around the trunks and branches, and crawl along the boughs in the ſame manner as upon the ſurface of the earth. They either ſpring from one tree to another, by bending their bodies, and exerting the elaſticity already deſcribed; or ſuſpending themſelves by the tail

tail to the extremity of a twig, they vibrate their bodies like a pendulum, till they reach a branch of the tree they wish to attain; then, fastening themselves there, they draw in the tail, and gather themselves up to the new situation.

The largest species of serpents exceed most other animals in length, surpassing even the largest crocodiles of twenty five or even thirty feet long, and are only surpassed in their turns by the whale tribe. On the other hand, there are some species of serpents scarcely thicker than a quill, and only a few inches long, being hardly larger than the smallest quadrupeds, either of the viparous or oviviparous class. Hence, in the class of serpents, the extremes of size differ more from each other than in any other class of animals. If, however, instead of comparing the largest with the smallest in regard to length, we measure their masses, we shall find that the quantity or weight of matter in the largest serpents, bears nearly the same proportion to that contained in the smallest species, as is found

Preliminary Discourse.

between the enormous maſs of the elephant or hippopotamus compared with the ſmalleſt mouſe. May we not therefore conclude, that nature has followed nearly ſimilar proportions in moddelling the largeſt and ſmalleſt ſpecies of the different claſſes of animals?

In the claſs of ſerpents, it was neceſſary that the additions of ſize ſhould take place chiefly in length, rather than in thickneſs; for otherwiſe, eſpecially in the larger ſpecies, being entirely deſtitute of legs, arms, or other external inſtruments of motion, they would have been hardly capable of performing even the ſloweſt progreſſive motion; the velocity of their courſe being probably proportionate to the ſize of the arc, or arcs, into which they are able to raiſe their bodies, relative to the maſs or bulk of their whole body. Had they been formed thick and ſhort, like the bodies of viviparous quadrupeds, they would have been unable to move, either for the purpoſe of food, or for eſcaping from danger.

Between the limits aſſigned by nature to the

the lengths of different ſerpents, from that of forty, or even fifty feet, down to a few inches, we find almoſt every intermediate degree of length appropriated to ſome ſpecies or variety; at leaſt from the ſmalleſt length, up to twenty or twenty-five feet. The longer ſpecies ſeem iſolated, as has been already obſerved * with regard to the largeſt ſpecies of viviparous quadrupeds; ſo that it would appear as if, throughout nature, the largeſt created objects were leſs connected by intermediary ſhades than thoſe which are ſmaller. This ſeries of ſizes, from that of a few inches, up to twenty-five feet long, is marked in all its intermediate degrees, by ſo many diſtinct ſpecies, or at leaſt more or leſs permanent varieties; and ſufficiently evinces the great diverſity of races in the claſs of ſerpents.

Preliminary Diſcourſe.

In a claſs of animals ſuch as this, it might be ſuppoſed, on a tranſient inſpection, that ſuch numerous ſpecies and varieties,

* See the articles elephant, hippopotamus, and other large viviparous quadrupeds, in Buffons Natural Hiſtory.

Preliminary Discourse.

ought to reſemble each other ſo completely, as hardly to be diſtinguiſhable, except in ſize; having their bodies formed almoſt exactly on the ſame model, and having no external or projecting members, to mark the differences of ſpecies, by the form and number of their parts and proportions. But when, to this variety of lengths, we add the great diverſification of colours, with which their bodies are ornamented, from the brighteſt white or red, to the deepeſt violet, or brown, or black; when we obſerve the infinite variety of ways in which thoſe colours are ſhaded into each other, ſo as hardly ever to preſent the ſame tints, when differently enlightened by the ſuns rays; when it is recollected that, of all theſe numerous ſpecies of ſerpents, ſome only contain ſingle colours, while others are adorned with many, differently contraſted and diſpoſed, in ſhades, net-works, ſtreaks, radiations, bars, ſpots, ſtars, and other regular or irregular figures; and when, laſtly, we conſider the differences which ſubſiſt in the poſition, ſize, and form of the ſcales and plates, with which their

their bodies are covered; we muſt admit, that the different ſpecies of ſerpents are as diſtinctly characteriſed as thoſe of any other claſs of animals.

The various ſpecies of ſerpents are moſt abundant in warm and temperate regions, though ſome are found in tolerably high latitudes. They inhabit both the old and new worlds, where they ſeem to increaſe in ſize and numbers, in proportion to the heat and moiſture, and the freedom of their range. Numerous inſtances are recorded, in the General Hiſtory of Voyages, of very large ſerpents, from twenty even to thirty feet in length, being found in Siam, the Philippine Iſlands, and other countries of great warmth and humidity. Several ſpecies are common to both continents, and it would appear, that the larger ſpecies are moſt extended through different countries. Theſe large ſpecies have more ſtrength, and are moſt deſtructive; are more able to execute their different motions with nimbleneſs, and to continue their exertions for a longer time and more ſwiftly; are more

Preliminary Discourse.

powerful in defending themſelves againſt enemies, and in attacking their prey; can travel to a greater diſtance, and can ſwim better in the water, being more able to reſiſt the efforts of the waves and currents, and are even able to ſwim acroſs very conſiderable arms of the ſea. We may likewiſe ſuppoſe, that the form and ſtructure of the larger ſpecies are more firm and permanent, and are leſs influenced by changes of food and of climate, ſo as to preſerve their original characters, even under very conſiderable changes in theſe reſpects, while the feebler frames of the ſmaller ſpecies are more readily injured in their form and proportions, have the ſhape and number of their ſcales and plates more readily altered, and the ſhades and diſtribution of their colours more eaſily changed, ſo as no longer to preſent any traces of their original characters. Perhaps, the changes produced by theſe cauſes may not be confined to the ſurface, but may have had equal influence upon an internal organiſation, little able to reſiſt againſt the powerful agency of climate

mate and food. These influences, and the changes which they may have operated on the external and internal conformations, may have even produced alterations on the habits of these species; for, being unprovided with strength to resist against accidents of various kinds, and against the vicissitudes of weather, their manners may have gradually changed; and the whole animal, in habits, manners, temper, and appearance, may have become so altered, in course of time, that several different races sprung originally from the same source, can no longer be recognised as of the same species *. On the other hand, the large ser-

* This hypothetic superstructure of reasoning, without any foundation whatever in patiently ascertained fact and observation, is happily now fast retiring from the various branches of science; and, it is to be hoped, will soon be as little attended to as the prophetic ravings, and astrological deductions of the dark ages. It would not cost much pains to form as just a speculation, why mankind might not have degenerated into monkeys, by vicissitudes of soil, climate, food, and culture; or why monkeys, losing their tails by the operation

Preliminary Discourse.

pents may very readily experience, under diverſity of climate, a few ſlight changes in colours or habits, ſufficient to mark the influence of ſoil and atmoſphere, from which no animals are entirely exempt; but, being leſs dependent on ſeaſons and ſituations, more conſtant in their habitudes, and leſs eaſily alterable in their forms and proportions, they will much more frequently retain, even in their moſt diſtant habitations, thoſe numbers and analogies of parts which are ſufficient to identify the ſpecies to which they belong. It muſt have been ſome of theſe great ſerpents ſwiming on the ſurface of the ocean, either driven out to ſea by the violence of tempeſts, or obliged to fly from the ſuperior power of ſome redoubtable enemy, which were ſeen raiſing their heads above the waves, and twiſting their nimble bodies into winding folds, and have given occaſion to the report of mariners

tion of ſimilar or oppoſite influences, might not have become, in courſe of time, exalted into men; or why elephants may not have dwindled to mice; or minnows become expanded into whales.—T.

riners of having obſerved the migrations of dragons or large ſnakes, almoſt twenty cubits long, from Ethiopia, as related by Pliny in the eight book of his Natural Hiſtory. Similar relations are given by modern voyagers, as will be more particularly noticed in ſome of the articles of this work.

The conſtitution of ſerpents is very different from that of viviparous quadrupeds, being leſs plentifully ſupplied with blood, and endowed with much lower animal heat and interior activity of ſyſtem and organiſation. In theſe reſpects they come nearer to the ſtructure of inſects, worms, and other leſs perfectly organiſed animals. From theſe circumſtances they are not injured by moiſture, when that is joined with ſufficient warmth, and it even ſeems congenial and neceſſary to their natures: Hence it would appear, that none of the ſpecies of ſerpents have degenerated in America; for, according to the relations of voyagers and travellers, they ſeem to have loſt no part, either of their ſize or force in that country; and, even in the moſt marſhy and drowned diſtricts,

Prelimi-
nary Dif-
courſe.

diſtricts, the large ſerpents are perhaps longer than in any other part of that new continent.

Though moiſture does not injure any of the ſpecies of this claſs, cold is extremely hurtful to moſt of them; and thoſe vaſt ſpecies, which voyagers and travellers deſcribe with ſo much terror, are only to be found about the equatorial regions. The farther we advance into the temperate climates, the ſpecies of ſerpents become ſmaller and leſs numerous; and in the colder regions, they are very ſmall and extremely unfrequent.

It would appear, that heat and moiſture are not alone ſufficient for giving the fulleſt development and activity to ſerpents. There are reaſons for preſuming, that a certain abundance of electrical fire in the atmoſphere is neceſſary to give full play to all their vigour, and that without this aſſiſtance they are leſs active, and do not acquire their largeſt ſize and force. It would ſeem, that times of tempeſt and hurricane, when the electricity of the atmoſphere is

in

in that ſtate of unequal diſtribution which gives riſe to thunder and lightning, are congenial to the nature of ſerpents, and animate them, while they oppreſs the activity of man and the large viviparous quadrupeds. The greateſt abundance of electrical fluid is to be found in the hotter regions, and there the thunder is both moſt frequent and moſt violent. Thus, to the heat and moiſture of the equatorial regions, as cauſes of the vaſt ſize of the ſerpents, we may add the ſuperior abundance of electricity in the atmoſphere between the tropics.

A thouſand abſurdities have been recounted concerning the ſexual union of ſerpents, which need not be taken notice of in this place. The male and female mutually twiſt their flexible bodies round each other, ſo as to appear but one body with two heads: They apply their vents together, and the male inſerts his organ, which is double, as in many of the viviparous quadrupeds; and for the moſt part the intimate union continues for a very conſiderable time. But for this lengthened

Preliminary Discourse.

ed union, the intercourse would be mostly barren, as the male has no seminal vesicles; which organs seem necessary in those animals which fecundate by transient unions, as a reservoir of the prolific fluid, that there may be a sufficient quantity for the purposes of fecundation, as the testes, in which that liquor is secreted, can only supply it slowly. Besides, in serpents, the ducts which lead from the seminal glands are very long, narrow, and contorted, which probably adds to the necessity of protracting the connection of the sexes, for the purpose of fertile embraces. The same thing happens in tortoises and other oviparous quadrupeds, which are equally destitute of seminal vesicles, and remain in a similar manner conjoined for a length of time. This protracted union is in some degree forced in serpents, in consequence of the structure of the double male organ; which is surrounded by a number of small spinous eminences turned backwards, that serve to retain the female, and perhaps to increase her energy: But, at any rate, these

pointed

pointed protuberances cannot be ſuppoſed to produce any very painful effects on the female, as her organs are of a cartilaginous conſiſtence. This ſubject is more fully treated of by Edw. Tyſon, in the Philoſophical Tranſactions, No. 144.

In every ſpecies of ſerpent the young are produced from eggs, as in the oviparous quadrupeds; but in ſome ſpecies theſe eggs are hatched within the bodies of the mothers: And to theſe ſpecies we might give the appellation of *viparous*, to diſtinguiſh them from thoſe animals properly called viviparous.

To avoid all ambiguity relative to the terms viparous and viviparous, we have thought it neceſſary to explain the difference between theſe two terms, as underſtood by Naturaliſts. Strictly ſpeaking, all animals whatever may be conſidered as produced from eggs *; ſo that, at firſt ſight, the only diſtinction between viviparous and oviparous ſeems to conſiſt in producing young perfectly formed, and in laying

* Omne animal ex ovo. Ariſt.

Preliminary Diſcourſe.

ing eggs: But, on more attentive examination, it is neceſſary to admit of two diſtinct kinds or ſpecies of eggs. In the one, the fetus is incloſed by a membrane named the amnios, which contains a ſmall quantity of liquor for nouriſhing the embryo in the early part of its exiſtence; but, as that liquor is by no means ſufficient for ſupplying the embryo through the whole proceſs of its developement, this egg is attached by means of an umbilical chord, or ſome other ſpecies of connection, to the body of the mother, or to ſome other extraneous body, from which the fetus may acquire the neceſſary ſuſtenance. As this egg is not calculated for promoting the growth of its included embryo, nor even for ſupporting it in life, it muſt only be conſidered as an imperfect egg: And ſuch are thoſe which incloſe the fetus of man and of other animals that have mammae or milk glands; which cannot be conſidered as oviparous animals, ſince they neither produce nor contain perfect eggs, properly ſo called.

The

The second, or proper species of eggs, on the contrary, not only contain a small quantity of liquid for sustaining the embryo during the first moments of its existence, but are provided with all the food which is necessary to its support and growth to the period of its perfect developement, when it breaks or tears the shell or membranes, and issues forth to the light. These eggs are either protruded from the mother soon after their formation and impregnation, or they remain within her body after their perfect formation, without adhering to it in any manner whatever, receiving nothing from it but the communication of heat: These eggs are perfect and complete, and such only merit the name of eggs properly so called. Of this kind are the eggs of birds, fishes, serpents, and oviparous quadrupeds, which have no milk dugs. All these animals are, properly speaking, oviparous, as they are all produced from eggs; and though, in some species of the classes of fishes, oviparous quadrupeds, and serpents, the eggs are hatched within the bodies of the

Prelimi-
nary Dif-
courſe.

the females, from which the young come forth completely formed, yet the eggs themſelves are perfect and unattached, and the animals which are produced from them are really oviparous: And if ſome of theſe be termed viviparous, or rather viparous, as we have before propoſed, theſe muſt by no means be conſidered as viviparous in the ſtrict and proper ſenſe of the term, but only as in contradiſtinction from the other more numerous ſpecies of the ſame claſſes, in which the eggs are extruded before hatching; for the term viviparous ought only to belong to thoſe animals that have imperfect eggs, which do not contain the whole food neceſſary for the included fetus.

It is therefore neceſſary to diſtinguiſh the ſeveral modes in which animals are produced into life: By the firſt, they are produced from a bag or envelope, which may be called in ſome meaſure an egg, but it is imperfect, and is neceſſarily connected for ſupport with ſome extraneous body or with the body of the mother, either of which may ſupply the nouriſhment it does

not

not contain within itself: By the second, they are produced from a perfect and unconnected egg, which hatches within the belly of the mother: And by the third, they come from an equally perfect and unconnected egg, which is extruded or layed from the body of the mother, some time before the eruption of the fetus. These two last modes are fundamentally the same; and, though they differ essentially from the first, their only difference from each other is in the circumstances attending the incubation or process of hatching; for, in the second, the interior warmth of the mother is necessary to the developement of the perfect egg and its included fetus; while in the third that duty is performed either by the mothers heat externally applied, or by the more extraneous warmth of the sun and atmosphere. Those animals, therefore, which are produced by the second or third modes, are equally oviparous; and we are consequently justifiable and right in appropriating that term, with most Naturalists, to tortoises, crocodiles, lizards, frogs, and

Preliminary Diſcourſe.

other quadrupeds, without milk dugs; and all ſerpents muſt unqueſtionably be conſidered as really oviparous, though in ſome, which we have here called viparous, the young are brought fully formed into the world *.

The number of eggs produced at one time varies in the different ſpecies of ſerpents. We know not whether the eggs diminiſh in number in proportion to the augmented ſize of the ſpecies, as is the caſe in birds and in the litters of viviparous quadrupeds †. Hitherto the habits of reptiles have been ſo little obſerved, that nothing certain can be advanced on the ſubject. It is only known that ſome ſpecies of viparous ſerpents produce above thirty young at one time, and that ſome oviparous ſerpents, in the temperate countries, have as far as thirteen eggs in one laying.

In

* See Raii Synopſ. method. Anim. Quadr. and Serp. Lond. 1693. fol. 47. and 285.

† This rule is by no means general: Poultry and pigs produce more eggs and more numerous litters than humming birds and mice—T.

In ſome ſpecies the eggs are not protruded in immediate ſucceſſion; and the females appear to require ſome reſt after the expulſion of each egg: There are even certain ſpecies in which that neceſſary act ſeems conſiderably difficult, and very painful. M. Segerus, phyſician to the King of Poland, gives an account of a female ſerpent in his poſſeſſion, which appeared to protrude her eggs with great difficulty, and ſhowed marks of pleaſure, and even of gratitude, for his aſſiſtance. He had obſerved her rubbing herſelf unuſually againſt the ſides of the place in which he had confined ſome ſerpents, and after ſome time ſhe dropped an egg: Taking her from among the reſt, he laid her on a table, and by gentle preſſure with his hands aſſiſted her efforts in laying thirteen eggs, in the ſpace of an hour and an half; and after every ſucceſſive egg ſhe reſted a conſiderable interval. Theſe intervals were longer when he gave her no aſſiſtance; from which he concludes, that the gentle preſſure he employed was uſeful; and, while affording

Preliminary Discourse.

that aid, ſhe continually rubbed her head ſoftly on his hands, as if in gratitude for his ſervices *.

The time which elapſes between the expulſion of the eggs and their hatching, in the various ſpecies of ſerpents, is ſtill unknown, and probably differs in different countries, according to their temperature. The females do not ſit upon their eggs, but leave them immediately after they are laid: Sometimes, eſpecially in very warm countries, they are left on the bare ground; but, for the moſt part, they are covered with more or leſs care, in proportion to the heat of the ſun and atmoſphere. Some ſpecies, in the temperate regions, depoſit them in dunghills, or collections of putrefying vegetable matter, on purpoſe that the artificial warmth of theſe ſituations may compenſate for the want of heat in the climate. Bartholinus relates, that, in the month of July, having diſcovered ſome cluſters of ſerpent eggs in the hollow of an old tree, he opened them carefully, and found

* Collect. Acad. Part. etrang. iii. 2.

found the embryo ſerpents diſtinctly alive, the pulſation of their hearts being very obſervable. The placenta was compoſed of numerous little veſſels, and was fixed to the yolk of the egg, or more ſtrictly it was merely a prolongation of that part, terminating by means of a ſmall umbilical cord, at the navel of the fetus, which was ſituated near the tail. He remarks, that theſe eggs dry up without hatching in any ſituation that is cloſe and very warm, and that they require a cool free air for being hatched *. Preliminary Diſcourſe.

When one of theſe eggs is opened ſome little time after its protruſion, the embryo ſerpent is found rolled up in a ſpiral form: At firſt this young ſerpent is motionleſs; but, if more advanced towards the period of hatching, it immediately begins to open its mouth and to breathe, by which its activity is ſoon rouſed; it unrolls itſelf and begins to crawl about. When the young ſerpents firſt burſt out from the eggs, or

* Act. Hafn. 1673. and Collect. Acad. part. etrang. iv. 226.

Preliminary Discourse.

when they firſt, in the viparous ſpecies, eſcape from the belly of their mother, they are at once under the neceſſity of taking care of themſelves. They receive no attentions whatever from their parents, who neither procure them food, nor teach them how to find it, or how to eſcape from thoſe manifold dangers to which their inexperienced and tender ſtate is liable. Being forced to depend entirely on their own inſtinctive faculties, vaſt numbers of them muſt neceſſarily periſh before they can acquire ſtrength enough to procure fit nouriſhment, or ſufficient experience to avoid and guard againſt dangers.

If we examine into the powers of their inſtinctive faculties, particularly into the ſenſes from which theſe muſt derive their exiſtence and activity, we ſhall find, in the firſt place, that the ſenſe of hearing muſt in theſe animals be extremely dull. They are not only deſtitute of any external ear, for gathering and concentrating the vibrations of ſound, but are even deprived of any external opening by which theſe may readily

readily enter the auditory organ. All sounds must be checked in the progress towards the tympanum, or drum of the ear, by being impressed through strong and close set scales. In the same manner their sense of smelling cannot be very exquisite, as the nostrils are extremely small, and are surrounded by hard scales. Vision, however, must in serpents be very acute, as their eyes are for the most part excessively brilliant and animated, extremely moveable, considerably protuberant, and advantageously placed for receiving the images of objects from an extensive field; the pupils have great power of contraction and dilatation, so as to admit a great number of rays when necessary, or to reject too great a quantity. When contracted, the pupil is linear, as in cats, night birds of prey, &c.; and is differently placed in different species, being vertical in some, and horizontal in others. Besides, the eye is protected, when necessary, by a membrana nictitans, from the too great violence of the suns rays, or from other injurious external causes. Their sense

Preliminary Discourse.

of taſte is probably of conſiderable delicacy, as the tongue is very ſlender, and is divided ſo as to admit of being readily applied to ſapid bodies. The tongue is commonly long, narrow, and ſlender, being compoſed of two round ſubſtances placed at each others ſides, and united for two-thirds of its length from the root forwards. Pliny ſays that it is divided into three points *, which it may ſometimes appear when violently agitated, but it is in reality only double. In moſt of the ſpecies the tongue is almoſt entirely concealed within a ſheath, from which it may be darted out of the mouth, even without opening the jaws, as there is a notch in the upper jaw juſt below the muzzle large enough for that purpoſe, and through which the tips of the double tongue may often be obſerved, even when the animal is aſleep. Even their ſenſe of touch muſt be tolerably nice, although they cannot apply their ſentient organs immediately to the ſurfaces of bodies, being only able to receive the impreſſions of external objects

* Hiſt. Nat. lib. ii. chap. 65.

jects through the medium of the hard scales with which they are covered, and having no divided members, no hands, feet, toes, or fingers, for embracing the bodies which they feel: But, as they touch these bodies by a kind of hand, consisting of as many points of contact as there are plates or scales on the under surface of their bodies, which they readily twist around the objects, their perception must be stronger than that of many other animals, particularly than most oviparous quadrupeds. Taking all these together, it is probable that the instincts of serpents are more perfect than those of oviparous quadrupeds, and that they are only inferior to those of viviparous quadrupeds and birds. Besides these considerations, as serpents are able to move with great agility, and to spring with great force and quickness to very considerable distances, it is probable that the habit of these exercises must in a short time give them numerous kinds and degrees of sensations, which, adding to and renewing the energy of their organisation, must increase their natural sensibility,

Preliminary Discourse.

ſenſibility, and augment the perfection of their inſtinctive faculties. Theſe ideas are confirmed by many circumſtances in their manners and habits: They wait with amazing patience, almoſt abſolutely motionleſs, and often for a very long time, the favourable moment for ſeizing their prey; they ſhew very ſtrong ſymptoms of violent rage when attacked; they erect themſelves with great boldneſs againſt any one who ſtands in their way; they attack with vaſt courage even enemies of ſuperior ſtrength; and throw themſelves furiouſly againſt any perſon or animal that diſturbs them either in their combats or amours; they ſeem animated with very acute feelings when in the ſexual congreſs; and, on ſuch occaſions, the male defends his mate with the utmoſt violence. All theſe inſtances are proofs of the ſuperiority of their inſtincts and ſenſations over thoſe of all other animals, except birds and viviparous quadrupeds.

Several ſpecies of ſerpents live quietly about the habitations of mankind, ſometimes

times entering their houſes, and even taking up their reſidence there; where, inſtead of being dangerous inmates, they deſtroy troubleſome animals, particularly noxious inſects. Schouten * deſcribes a particular ſpecies of ſerpent, as frequent on the coaſt of Malabar, which the Dutch call *Rat-catchers*, from their living principally, like cats, on rats and mice; and ſo far are they from hurting mankind, that they often paſs over the bodies and faces of people who are aſleep, without doing them the ſmalleſt violence or injury; they wander about the rooms with great familiarity, and often ſeem to chooſe the fineſt bed for their repoſe or concealment. He adds, that mariners generally put ſome of theſe ſerpents on board ſhip, along with their fire wood, on purpoſe to deſtroy ſuch noxious inſects as harbour among it. Serpents are even ſometimes rendered perfectly tame and familiar, ſo as even to ſhow ſtronger ſigns of attachment to their maſters, than many kinds

* Hiſt. gen. des. Voyages, XLIII. 346.

Preliminary discourse.

kinds of domesticated birds, or even of viviparous quadrupeds, being only surpassed in their fidelity by the dog, which is the symbol of that virtue *.

As in most animals, the very large serpents are seldom found in companies. These would require too much space for moving about, and for hunting their prey, and would consequently disturb and incommode each other; and, being very strong, and possessed of powerful weapons, they must necessarily be formidable to each other. Such as do not exceed seven or eight feet long, often inhabit the same forest or the banks of the same river in great numbers, and even collect in prodigious societies in the same subterraneous hole or retreat. They are sometimes found in deep caves, in large heaps, twisted together in such a manner as to appear one large mass with numereus heads. When any person ventures into a dark cavern, which is filled with such inhabitants, at first only

* See the Article appropriated to the Common Viper.

only a ſlight noiſe is heard, occaſioned by their natural motions on the dry leaves or gravel, or by their endeavouring to conceal themſelves ſtill more from the intruder, for ſerpents do not willingly attack mankind unleſs provoked: But if they are irritated, either by too near approach, or by the perſon ſtaying too long, they begin to hiſs all around; and, if there be ſufficient light, vaſt numbers of heads may then be obſerved erected from a few ſhapeleſs bodies all covered with ſcales, the eyes of every head gliſtening with rage, and every tongue extended and quivering with great velocity. In theſe ſocieties, or rather collections of ſerpents, they remain together without undertaking any combined operation, neither endeavouring to render their common retreat more convenient, nor acting by mutual conſent in any way whatever. This want of united action probably proceeds from their being deſtitute of hands, feet, or other members by which they can act, having only their mouths for every ſuch purpoſe: And it is probably owing to this, and to their

Preliminary Discourse.

their consequent want of concert, that they do not unite together against enemies, or against such prey as might be more readily caught and destroyed by numbers.

In the higher latitudes, serpents are liable to become torpid, or they pass the cold weather in the state of hybernation; and this torpor is of longer or shorter continuance, and more or less perfect, in proportion to the severity and duration of the cold weather. As all the large species of serpents inhabit the torrid zone and tropical regions, where the weather is never so cold as to injure their vital motions, this state of hybernation is of course confined to those smaller species that are found in the colder countries, both in the northern and southern hemispheres. Immediately on the first appearance of spring, the torpid serpents revive from their hybernation; but, as in oviparous quadrupeds, and most other hybernating animals, they revive in spring, through the influence of a lower temperature than that which was unable in autumn to keep up their vigour and activity;

ty; for they have been frequently obſerved to retreat in autumn to their winter concealments, and to become torpid in an equal or even higher temperature than that which reſtores their ſuſpended animation in the ſpring. This fact is ſingular, and ſhows that the ſpring temperature is not the ſole agent, by which the hybernating animals are revived and re-animated. The atmoſphere of ſpring not only begins to acquire additional temperature, by the increaſing altitude of the ſun and more direct reception of its rays, but begins at the ſame time to recover a large quantity of electric fluid, which had been diſſipated by the ſummer ſtorms of the former year: Hence the ſtorms of wind and thunder are never ſo violent in autumn as in ſpring, although the temperature of theſe two ſeaſons are often equal. This electrical fluid is one of the great agents which nature employs, for animating the various kinds of living creatures which cover the ſurface of this earth: Therefore, when that vivifying element is abundant in the atmoſphere, it is not to be wondered

Preliminary Discourse.

wondered at, that animals, already penetrated by that powerful cauſe of life and motion, ſhould recover their vigour under an equal or even rather inferior temperature than was unable to preſerve their activity without its aſſiſtance *. Moſt of thoſe animals which poſſeſs a ſufficiency of internal heat to remain without torpor in cold weather, and even mankind, experience this difference in the action of the warmth of ſpring and autumn: Every other circumſtance being equal, they have a conſiderably greater degree of vital power and of internal energy in the beginning of ſpring, than at the approach of winter; becauſe they are equally ſuſceptible with thoſe other animals, of being more or leſs excited by the electrical fluid, which is conſiderably leſs active or leſs abundant in autumn than in ſpring.

Some

* It is rather unfortunate for this theory, that, in a former paſſage, the author obſerves, that mankind and moſt viviparous quadrupeds are dull and languid during thunder—when the atmoſphere is charged with this ſuppoſed cauſe of life, vigour, and activity.—T.

Some time after their reſuſcitation from the torpid ſtate, ſerpents throw off their old ſkins, like the oviparous quadrupeds, and acquire new coverings; and, like theſe other animals, they keep ſomewhat concealed until the new ſkin has acquired a ſufficient degree of firmneſs *. This change of ſkin is ſubject to various modifications dependent on the ſeaſon and climate, and is various in its circumſtances in the different ſpecies of ſerpents. Under the article appropriated to the Eſculapian viper, a very minute account will be given of the different ſteps in this curious proceſs. The ancients ſeem chiefly to have obſerved this annual change of ſkin in ſerpents, more than in oviparous quadrupeds; and the warm fancy of their poets, conceived this operation to be a kind of periodical renewal of youth, by means of which all the deſtructive effects of age were repaired or thrown off. They have recorded this idea in ſeveral proverbial expreſſions; and, believing

Preliminary Diſcourſe.

* G. Segerus, Ephemerid. des. Curieux de la Nature.—Vide Collect. Acad. Part. Etrang. iii. 1.

Preliminary discourse.

lieving that with its new skin it recovered annually the whole powers of life, so as to enjoy a perpetual youth, they adopted it as the symbol of eternity, and connected several of their religious and astronomical ideas with this natural phenomenon.

The real length of life of serpents is quite unknown. It may be presumed to differ in the various species; and it is probable, that the larger species live longer than those which are smaller. On this subject, however, authentic facts and attentive observations are still wanting; and are indeed extremely difficult to procure, if not altogether impracticable. The external figure of serpents is so extremely simple, that it would be very difficult, if not impossible, to ascertain, that the same individuals had been observed, at different times for any length of time, in the woods and other places where they enjoy liberty, and where only they can be supposed to live their full period. The large species of serpents, which might perhaps be more readily identified, are either too dangerous in reality,

or

Preliminary discourse.

or are objects of too great terror, to admit of being observed with sufficient attention and perseverance: The small ones, which are likewise objects of terror, on account of the venomous nature of many of them, elude every attempt of those who endeavour to investigate their habits, either by their smallness or through the nature of their retreats. Though we are thus destitute of positive facts and direct evidence on this subject, we may safely presume, from analogy, that in general their lives are protracted to a considerable length. This is generally the case with oviparous quadrupeds, with which class of animals serpents have very strong connection in their analogies; in external structure, low temperature of blood, slight degree of solidity or hardness of bones, form and nature of scales, habits of life, periodical torpor, change of skin, &c. If this analogy be well founded, the very large species of serpents should attain a very great age; for, if we compare them with crocodiles, which require thirty years to grow from the length of a few inches to

Preliminary Discourse.

that of twenty-five or thirty feet, we muſt conclude, that ſerpents above forty feet long, muſt require at leaſt an equal time for their growth. Theſe vaſt ſerpents are produced from eggs of the ſame nature and nearly of the ſame ſize with thoſe of crocodiles, and the fetus of the very largeſt ſpecies can ſcarcely exceed two feet long when it leaves the egg. We have ſeen and examined young ſerpents three feet long, which were diſtinctly of the ſpecies that reaches to thirty and forty feet in length, and were certain, from the ſtructure and diſpoſition of their ſcales, that they muſt have been a good while out of the eggs before their death. Though the whole of this ſubject is founded on conjecture, it may be fairly ſuppoſed, that the great ſerpents require an equal period with crocodiles for attaining their full ſize, and that the total length of their lives is nearly equal in both animals.

The duration of life in ſerpents, as in almoſt all ſavage animals which receive neither protection or nouriſhment from mankind, would

would certainly be considerably longer if they were capable of supporting a real old age; but the very commencement of that period must necessarily be to them almost always the end of their lives. Hardly any of those animals, which live in a perfectly natural state, can possibly prolong their existence beyond the period when their powers begin to diminish. This period, which in man in a state of society scarcely marks the end of two thirds of his life, is the very end of life in wild animals. Whenever their vigour begins to diminish, they are no longer able to overtake such animals as are necessary for their food, or to endure the continued fatigue of a long search for procuring proper nourishment, or to escape by flight from enemies, or to attack or defend as formerly with equal or superior weapons. From that moment, having fewer resources when they have most occasion for them, exposed to greater and more frequent dangers when they have less strength and agility to defend themselves or to avoid them, more frequently in want of food

Prelimi-
nary Dif-
courſe.

when it is become ſtill more requiſite for recruiting their ſtrength which exhauſts more rapidly; all theſe diſadvantageous circumſtances muſt occaſion old age in them to be extremely ſhort, and to be followed by a ſtill ſhorter decrepitude, increaſing every inſtant by rapid ſtrides; either retired into their uſual receſſes, from which they are unable to move, or unable perhaps even to drag themſelves into concealment, they die ſoon of hunger and exhauſtion, or are devoured by other animals more vigorous than themſelves. Hence it is, that wild animals, or animals which live in the complete ſtate of nature, are hardly ever found with marks of weakneſs and decay.

Such would even be the caſe with man, were he to live ſolitarily in the perfectly ſavage or natural ſtate; his life would neceſſarily terminate immediately upon the commencement of weakneſs, decay, or diſeaſe, or in a very ſhort time after: It is entirely owing to ſociety, by furniſhing him with ſhelter, aſſiſtance, and food, that his days are prolonged by foreign helps, when

no

no longer able to procure these by the exertion of his own solitary enfeebled powers. In this way, human intelligence may be said to have almost doubled the period of life intended by nature for man: And, though it must be allowed, that the fruits of that very intelligence, often indeed miserably misapplied, the effects of society, and numberless improper contrivances, have induced excesses of various kinds, which shorten the duration of life, and even diminish the very sources of existence; these evils, or at least the concomitant state of society in which they exist, perhaps not necessarily, have given rise to such powerful props as prevent their own destruction in individuals when they begin to fail. It may even be ascertained, that, when all circumstances are properly appreciated, they have added more to the duration of human life, by the advantages which they have procured, than they have diminished it, by the multiplied evils which attend or flow from them. Domesticated animals, enjoying in a certain degree the same shelter

Preliminary Discourse.

with man, and finding always a sufficiency of nourishment within their reach, would, for the most part, continue in old age for a considerable period, and would thus receive some recompence, through a participation in the arts and contrivances of mankind, for the liberty of which man has deprived them; but the same interested motives which induce us to rear them, lead us to neglect them when they become useless, by a diminution of their strength and other qualities.

While still enjoying the full use of their strength and activity, the great serpents must necessarily devour a large quantity of substantial food; they are by no means satisfied with vegetable nourishment, but prey upon every animal that comes within their power. As their digestion is in general very slow, so that their food remains long in their stomach and alimentary canal, those animal substances which they swallow, being extremely susceptible of decomposition, putrify and corrupt, so as to produce an extremely fetid odour. Several travellers, particularly

particularly M. de la Borde, according to communications from that gentleman in his correſpondence with the Royal Cabinet, have been almoſt ſuffocated on opening the bodies of ſerpents, by the ſtrong and ſtinking ſmell ariſing from theſe putrifying ſubſtances in their inteſtines. This ſtrong flavour even penetrates the ſubſtance of the ſerpents, and, exhaling from their ſurfaces, gives indication of their approach from conſiderable diſtances. In ſome ſpecies, it is even augmented by exhalations from particular glands, but is eſpecially powerful from the mouth of the animal, being produced from a fertile ſource of corrupted and mephitic vapours; and, extending to a diſtance, it often envelops the victim which the ſerpent means to devour, and either ſuffocates it, or, by adding to the terror which is induced by the preſence of the horrid reptile, ſtupifies its prey, deſtroys all its energies, and produces a kind of lethargic ſtate, which renders it a defenceleſs victim to the devouring jaws of its enemy.

This

Preliminary Discourse.

This putrid vapour, which produces so destructive an effect on such animals as are exposed to its full influence, and which has given rise to many absurd tales *, forms a kind of infected atmosphere round most of the larger reptiles, both such as have venomous juices, and such as are without that powerful engine of death; but it must not by any means be confounded with the real poison, with which in general it has not the smallest connection; for that other fluid, notwithstanding its amazing activity, has not for the most part any sensible odour, even when of the most mortal quality.

This noxious and almost insupportable vapour is not, however, altogether without its beneficent use, as in some cases it gives indication of the danger, and warns the unwary passenger to avoid the destructive animal from which it proceeds. In Brasil †, where serpents are found in vast numbers, in the fields, woods, insides of houses, and even in the beds and hammocks,

* Hist. gen. des Voyages, liii. 445.

† Hist. gen. des Voyages, liv. 326.

mocks, and where day and night people are continually liable to their dangerous bites, that produce death, accompanied by terrible tortures, unleſs ſpeedily remedied by bleeding, dilatation of the wounds, and the moſt powerful antidotes, ſome ſpecies exhale ſo ſtrong a flavour of muſk, as to be readily perceived before their near approach, ſo as to ſerve as a very conſiderable ſafeguard againſt their attacks.

When a ſerpent has ſeized an animal on which he means to feed, he holds it faſt, by twiſting around its body, embracing it in numerous folds, which break and bruiſe all its bones, often aſſiſting himſelf in the operation by means of trees, large ſtones, or other fixed bodies, round which he winds himſelf, including the animal he means to prepare for food; he then ſmears the body of the animal all over with his ſpittle, or ſome glutinous liquor, which renders it ſlippery, and enables it to be ſwallowed whole with great facility. This laſt operation is facilitated by the peculiar articulation and great mobility of the ſerpents

Preliminary Discourse.

pents jaws, which can be ſeparated in both directions, as far as the elaſticity of the ſkin will admit, each jaw being formed of two lateral bones, that are only attached at the muzzle by elaſtic and diſtenſile ligaments: By this means the mouth and throat are capable of great diſtenſion, ſo as to ſwallow bodies that are even larger in diameter than that of the ſerpent. Beſides this faculty, the circuitous graſp of ſerpents is ſo extremely powerful, as frequently to cut the bodies of animals aſunder, as if with a cutting inſtrument. This mode of preparing their prey for food in ſerpents, particularly the larger ſpecies, was known to the ancients; among whom, Pliny mentions that when one of theſe vaſt reptiles has ſwallowed a large animal, a ſheep for inſtance, it makes great exertions, by rolling itſelf in various ways to break the bones of its cumbrous morſel.

In conſequence of this previous maſtication, as it may be called, their food muſt be readily digeſted * in the ſtomach, more eſpecially

* This idea does not agree with the ſlow digeſtion and

especially as their digestive fluids seem to be very abundant; the gall bladder, for instance, being in general very large in proportion to their size, and to the other organs.

The size of the morsel of food which they attempt to swallow at one time is sometimes so large, in proportion to the width of the throat, after all the expansibility of their jaws and skin, as only to get half into the stomach, in spite of every possible exertion. When this is the case, they are forced to remain in that strange situation until the part which has reached the stomach is digested; and then, by renewed efforts of bruising and smearing the remaining part, to get it swallowed likewise. In this situation we might expect them to be strangulated, by the enormous mouthful entirely obstructing the passage of the air into the throat; but this inconvenience is obviated by the structure and situation of the windpipe, which extends beyond the extremity

and consequent putrefaction of their food mentioned a very little before.—T.

Preliminary Discourse.

extremity of the ſheath which contains the tongue, by which the air gets free paſſage into the lungs, even when the throat is completely choaked up. This windpipe has no epiglottis for ſhutting its upper orifice, probably from not being wanted in the act of ſwallowing; it conſiſts for the moſt part of a ſimple narrow ſlit, which is the reaſon, in all probability, of the abſolute want of voice in ſerpents, except a hiſs or loud blaſt of air. Some parts of their food, ſuch as the feathers of birds, their ſtomach is unable to digeſt, and theſe are afterwards ejected: The ſame thing has been obſerved in birds of prey, from whoſe ſtomachs the feathers of other birds are ejected in a ſimilar manner.

After having completed the digeſtion of their food, during which they are motionleſs and almoſt torpid, ſerpents recover a degree of activity proportional to the quantity of nouriſhment they had received; and, upon the ſmalleſt beginning of hunger, they become exceſſively dangerous to ſuch animals as are weaker or worſe armed than themſelves.

themſelves. They almoſt always precede their engagements by hiſſing, which is their only voice, probably cauſed by the continual protruſion of their long divided tongue *, whenever they are inclined to produce any ſound: This hiſſing noiſe, which is ſofter or ſtronger according to circumſtances, ſeems to have little analogy with the voice of certain quadrupeds and birds, which ſerves as a kind of language to expreſs the gentler ſenſations as well as the more violent paſſions; in the larger ſerpents it appears only to indicate want, deſire, or rage; no peaceful ſenſation ſeems to actuate them in any ſufficient degree for being expreſſed by their organs of voice. Almoſt all the animals of prey, both of the air and land, ſuch as eagles, vultures, tigers, leopards, panthers, &c. only emit their cries in a ſimilar manner when about to ſeize their prey, or to join in mortal combat with each other for the poſſeſſion of their females; they are never obſerved, like

Preliminary Diſcourſe.

* A better reaſon for their want of voice has been formerly ſtated, as owing to the want of epiglottis.—T.

Preliminary Discourse.

like moſt domeſtic animals and ſinging birds, to ſoften their voices into the expreſſion of peaceful joy, ſoft enjoyment, or tranquil and innocent pleaſure; their language poſſeſſes only the tones of anger or fury and the clamours of war, and expreſſes merely the deſires of procuring prey, and of deſtroying an enemy, or their diſappointment on loſing the expected poſſeſſion of prey or of their females, when after violent combat their ſtrength has proved inferior to their antagoniſt, and they are obliged to retreat covered with ſevere wounds*.

If, like the terrifying voice of tigers, eagles, and vultures, the hiſſing of large ſerpents were heard at a diſtance, it would ſerve as a warning of their dangerous approach; but the voice of theſe laſt animals is far too low to enable mankind, or other objects of their deſtruction, to judge of their

* This account of the voice of birds and animals of prey is certainly not entirely juſt: Hawks, a ſpecies of the eagle, and all the feline genus, have diſtinct expreſſions for peaceable ſatisfaction, for playfulneſs, and for careſſing their young and their mates.—T.

their danger. Their vaſt ſize, however, prevents them from accompliſhing their purpoſes in complete concealment; as, in places deſtitute of wood, they are eaſily perceived at a diſtance, by the motion of graſs and other high plants, which bend under their weight; and where theſe are wanting, or are too low to cover them, they may be ſeen far off winding their arched bodies to a conſiderable height *.

Either that ſwampy places are moſt congenial to their natures, or becauſe experience teaches them that the borders of rivers, lakes, and marſhes, in the torrid zone, are moſt frequented by the animals on which they prey, and are there to be found in greateſt plenty, and caught with leaſt trouble, ſerpents chiefly frequent ſuch moiſt ſituations, near ſtagnant waters, ſprings, and rivers. In theſe places, under the equatorial ſun, as, for inſtance, in the ſandy deſerts of Arabia, they lie in wait during the day for goats, antelopes, and ſuch ani-

* Adanſon, Voyage to Senegal.

Preliminary Discourse.

mals, which, overcome with thirſt, exceſſive heat, and frequently, in theſe parched countries, oppreſſed with famine, become their eaſy and almoſt unreſiſting prey. Tigers, and other ferocious beaſts of prey, frequently repair to theſe watering places; more, however, in queſt of blood than of water; and are ſometimes the prey, and at other times the aggreſſors, in mortal combats with enormous ſerpents. In theſe burning regions, particularly when the natural exceſſive heat is increaſed almoſt beyond bearing by ſtorms; when the direful roarings of the thunder, and the terrible flaſhings of lightning, animate the native fury both of the ſerpents and theſe other animals of prey, by the action of the electrical fluid joined to the heat of the burning ſands and almoſt ignited atmoſphere; then, tormented by intolerable thirſt, and ſurrounded by elementary fire, while an almoſt equal fire flaſhes from their enraged eyes, the ſerpent and tiger diſpute, with more than ordinary fury, the empire of theſe blood-ſtained fountains. Some travellers

vellers relate having ſeen ſuch terrible combats: While the tiger, furious with thirſt and hunger, and roaring in the moſt terrible manner, ſeizes the ſerpent in his fangs, and inflicts the moſt cruel wounds with his teeth, his ſupple foe, hiſſing with pain and rage, ſurrounds him with the multiplied and enormous folds of his gigantic body, and, ſqueezing him with convulſive efforts, craſhes his bones to pieces; the efforts of the tiger are ſpent in vain, to diſengage himſelf from his ſuperior enemy, his ſtrength fails amid the cruel graſp and ponderous weight of the ſerpent, and at length he ſinks to the ground, and expires in the terrible embrace.

This enormous ſtrength in ſerpents is eaſily accounted for, from the immenſe number of powerful levers formed by their chine and ribs, acted upon by a prodigious body almoſt entirely compoſed of muſcle, which winds all round the enemy they mean to deſtroy; while the whole power of viviparous animals of prey is confined

Preliminary Diſcourſe.

to their jaws, in which the lever ſeldom exceeds a foot in length.

Beſides this advantage of ſuperior ſtrength, united to very conſiderable cunning and addreſs, ſerpents, like the oviparous quadrupeds, poſſeſs the property of being extremely tenacious of life: They may be deprived even of a conſiderable portion of the tail, not only without being killed, but the part cut off almoſt always grows again. This property of reptiles has been exaggerated by the ancients; for Pliny alleges that the eyes of a young ſerpent will be reproduced after being torn out. Not only by means of wounds that is it difficult to deprive ſerpents of life; but it is even difficult to kill them by total want of nouriſhment, as they will live ſeveral months entirely deſtitute of food *; and they retain ſome remains of ſenſibility after being almoſt entirely deprived of air. Redi has made ſeveral experiments on this ſubject; having incloſed ſerpents in the almoſt exhauſted

* See ſeveral of the ſpecies of this claſs in this and the ſucceeding volume.

hauſted receiver of an air pump, in which they ſhowed ſome ſigns of life, after remaining near twenty-four hours in that ſituation. Boyle relates ſimilar experiments, which we ſhall inſert in his own words. 'A viper was incloſed in a middle-ſized 'receiver, which was exhauſted with great 'care; at firſt it moved about with great 'eagerneſs, as if in ſearch of air; in a lit-'tle time it threw out ſome froth from its 'mouth, which ſtuck to the ſides of the 'receiver; its body ſwelled very little, and 'the neck ſtill leſs, while the air was ex-'hauſting, and for ſome time after; but 'afterwards both became exceſſively ſwoln, 'and a kind of bladder roſe upon the back. 'For an hour and half after the total ex-'hauſtion of the receiver, the viper gave 'ſigns of remaining life, but none were 'obſerved after that period. The ſwelling 'of the body extended to the neck, but 'was very little obſervable about the low-'er jaw; when the neck and throat were 'looked through, oppoſite to the flame of 'a candle, they appeared conſiderably tranſ-

Preliminary Discourse.

'parent, where they were not obscured 'by the scales. The jaws remained wide 'open, and somewhat distorted; the la- 'rinx, or narrow opening into the wind- 'pipe, was open, and extended backwards 'almost to the root of the lower jaw; the 'tongue extended from behind the epi- 'glottis forwards, being of a black colour, 'and apparently lifeless; and the inside of 'the mouth was similarly blackish. Ha- 'ving admitted the air after twenty-three 'hours, the mouth shut for a moment, but 'opened presently after, and continued 'open: Upon pincing or burning the tail, 'different movements were observed over 'the whole body, indicating some small 'remains of life.'

'A common venomless serpent was in- 'closed in a portable recipient provided 'with a gauge, and the air completely ex- 'hausted; and, having taken proper pre- 'cautions to prevent the air from getting 'in, the receiver and serpent were carried 'to a retired quiet place: Having remain- 'ed in that situation from ten or eleven at

'night

'night of one day till about nine next 'morning, the ſerpent appeared dead; but, 'on being placed at a moderate diſtance 'from a fire, it gave ſigns of life, and even 'darted out its forked tongue: It was left 'in that ſituation till next day in the af-'ternoon, when it was completely dead, 'and could no longer be recovered; the 'mouth, which was ſhut the preceding 'day, was then wide open, as if the jaws 'had been ſeparated by means of conſider-'able force *.' Theſe experiments, by Redi and Boyle, explain how ſerpents are able to acquire their full growth, and to enjoy the full exerciſe of their ſtrength and faculties, and even to chooſe by preference their abode, amid putrid marſhes, the poiſonous exhalations of which corrupt the air, rendering it greatly leſs proper for animal reſpiration, and produce in ſome meaſure on the atmoſphere the effects of an incipient vacuum.

Although ſerpents, particularly the very large ſpecies, and thoſe which are poſſeſſed of

* Collect. academiques, partie etrangere, vi. 25.

Preliminary Discourse.

of venom, have in all ages been objects of extreme terror, their remarkable form and ſingular habits have excited ſufficient attention to render their principal qualities inquired into and known. It would appear that the ancients, even in the remoteſt periods, were acquainted with all their properties, ſuch as we have deſcribed them. They muſt even have been obſerved with attention in thoſe early periods of antiquity which preceded the heroic ages, and of which only the moſt imperfect records have reached our times, though in theſe moſt of the religious notions of the Egyptians and Greeks began to aſſume thoſe ſplendid forms which have ſupplied ſo many fine images to ancient poetry. The works of the earlieſt poets which have reached our days, the records of the Grecian mythology, and the ancient traditions in which the ſerpent is employed emblematically, all agree in attributing very conſiderable ſize to that animal, and ſeem to conſider its magnitude as dependent on its abode amid marſhy and wet ſituations: Thus they have related, that,

that, after the deluge of Deucalion, the ſlime produced an enormous ſerpent, which was ſlain by the arrows of Apollo; ſignifying that it was killed and dried up by the influence of the ſuns rays. They likewiſe conſidered enormous force as one of the attributes of the ſerpent; as, in relating the combat between Achelöus and Hercules, the former is ſaid to have aſſumed the form of a ſerpent, on purpoſe to give him the advantage againſt his redoubtable adverſary. The agility and nimbleneſs of all its movements have occaſioned the ſerpent to be choſen, in the Egyptian and Greek mythology, as the ſymbol of the rapidity of time, and of the quick ſucceſſion of ages; wherefore it is uſed as the emblem of Saturn, who was employed to denote Time: In this view, the ſerpent is repreſented as forming a complete circle, by holding its tail in its mouth, to ſignify the infinite ſucceſſion of ages to each other, and the duration of eternity, in which every inſtant follows another with inconceivable rapidity, and of which the whole has neither

Prelimi-nary Diſ-courſe.

neither end nor beginning. The ſerpent was thus repreſented in ſilver, in one of the temples of Memphis, as is proved by ſome of thoſe monuments of the moſt remote antiquity which have eſcaped the devaſtations of time, whoſe ſymbol it was; and it was employed in the ſame form, and with the ſame views, to ſurround the chronological pictures of the Mexicans, joined to a variety of hieroglyphic figures which pointed out the ſucceſſion of months and years, and even ſerved as records of paſt events *.

The ancients have likewiſe attributed the ſame inſtinctive ſagacity to the ſerpent, which has been univerſally agreed in by all modern travellers, and by all obſervers of this remarkable animal. The former have even exaggerated this inſtinct into intelligence, foreſight, and divination; having, for that reaſon, placed it around the ſhield of Minerva, the goddeſs of wiſdom and prudence; and, from ſimilar ideas, it was conſecrated to the god of health, Eſculapius having

* Hiſt. gen. des Voyages, xii. 48.

having been worſhipped in Epidaurus under the form of a ſerpent. Serpents were adored by the inhabitants of Argos. Herodotus relates, that the Athenians had ſeen in the temple a vaſt ſerpent, which was conſidered as guardian of the citadel. Even Jupiter was worſhipped in ſeveral cities of Greece under the form of a ſerpent. The ideas which the ancients entertained reſpecting the intelligence and other qualities of ſerpents, may be learned from the writings of Plutarch, Euſebius, Schaw, and Savary. By the Egyptians it was uſed, in their ſymbolical language, as an emblem of the ſun, of the good genius, and of ſupreme and infinite goodneſs, which, according to Euſebius, was ſignified in the word *Cneph;* and the ſame author ſays that its name among the Phenicians was *Agatho-daimon*, or the good genius *.

The ancients have likewiſe recogniſed the long life of this animal, by feigning that

* See Plutarch, de Iſide & Oſir. Euſebii, Prepar. Evang. Schaw, Geograph. Obſerv. on Syria, Egypt, &c. Savary, Lettres ſur l'Egypte.

Preliminary Discourse.

that Cadmus and several other heroes were transformed into serpents, as if they thereby meant to indicate the perpetual duration of their renown; and they have chosen it to represent the *manes* of those whom they held most dear, by introducing it among the tombs of their friends and heroes *. They have likewise alluded to the terror which it inspires, and particularly to the mortal poison which some species conceal, by describing the hair of the fatal sisters as composed of snakes; as gnawing the heart of Envy, and arming the bloody hands of Discord. By means of certain combinations or contrasts of ideas, which very often occur on frequent examination of objects, particularly when observed by different eyes, they have, besides these notions of horror, been able to perceive the beauty of colouring and elegance of form in serpents, which we shall have frequent occasion to point out in the course of this work;

* See, in the fifth Eneid of Virgil, the elegant description of the serpent observed by Eneas surrounding the tomb of his father.

work; hence Jupiter, who aſſumed the form of a ſwan to captivate Leda, is reported to have taken that of a ſerpent to deceive the mother of Alexander.

All theſe opinions, which have certainly originally proceeded from the moſt anciently peopled countries of Aſia, have extended, with various modifications, among the half poliſhed nations of America and the barbarous tribes of Africa; and, like other traditions, ſwelling or diſtorted in their progreſs, have become embelliſhed by lively fancy, adulterated by ignorance, and falſified by ſuperſtition and terror. Beſides the Egyptians, Grecians, and Phenicians of antiquity, the ſerpent has received divine honours in America, in the kingdom of Juida in Africa, and in many other countries; having ſtill its appropriate altars, prieſts, and ſacrifices. One of the kings of Calicut conſidered ſerpents as particularly the children of heaven, as endowed with divine power, and even as divinities, from their power of producing almoſt inſtant death; and therefore enacted, that any one

who

Preliminary Discourse.

who killed a ſerpent ſhould be puniſhed with the ſame ſeverity as one who had committed murder. In an unpubliſhed memoir by the late M. Commerſon, on the *Autorrha-bahde*, or Commentary on the *Shaſtah*, the moſt ancient of the ſacred books of Hindoſtan, he ſays that the ſerpent was conſecrated in their religion as the ſymbol of divine wiſdom.

M. Bailly * gives us the following picture of the religious or ſuperſtitious ideas of various nations concerning ſerpents. 'The 'ancient Egyptians painted a ſerpent, co- 'vered with ſcales of various colours, and 'rolled upon itſelf. We learn from the 'interpretation of the Egyptian hieroglyphics, by Horus Apollo, that, in that language, the ſcales of the ſerpent were employed to ſignify the ſtars of heaven. 'We learn from Clemens Alexandrinus, 'that the ſame people indicated the oblique 'motions of the ſtars by the contorted figure of a ſerpent. Both Egyptians and 'Perſians repreſented a naked man writhed

* Hiſtoire de l'Aſtronomie ancienne, p. 515.

'ed round by a ſerpent, on the ſpirals of 'which the ſigns of the zodiac were paint-'ed, as is ſeen on ſeveral ancient monu-'ments, particularly a repreſentation of Mi-'thras, explained by Bannier, and on a 'mutilated ſtatue diſcovered at Arles in '1698. This emblem was evidently meant 'to convey an idea of the courſe of the 'ſun through the twelve ſigns, with his 'double motion, annual and diurnal, by 'the combination of which he ſeems to 'advance from one tropic to the other 'through a ſpiral courſe. This hieroglyphic was uſed for the ſame purpoſe by the Mexicans, whoſe cycle of fifty-two 'years was repreſented by a wheel, ſurrounded by a ſerpent having its tail in its 'mouth, and forming four knots, to repreſent the four ſubdiviſions of the cycle, 'into periods of thirteen years. The figures uſed for repreſenting the conſtellations and the ſigns of the zodiac, and the 'whole marks or characters employed in 'aſtronomy, both of ancient and modern 'times, are evident remains of the ancient

'hieroglyphic

Preliminary Discourse.

'hieroglyphic language. The nodes of 'the moon are called the *head* and *tail* of 'heaven by the Chineſe, and by the Ara- 'bians the head and tail of the dragon; 'which fanciful animal is reckoned holy 'or heaven-born by the Chineſe, who have 'probably confounded together the pure 'ancient ideas of aſtronomy and hieroglyphical language. Beſides theſe notions, 'the *Edda* mentions a great ſerpent as ſurrounding the earth. All theſe aſtronomical ideas, of ſo many different and diſtant 'nations, have apparently one common origin; in which the ſerpent denotes the 'perpetual revolution and renovation of 'time, and the head and tail of the dragon are employed to ſignify the nodes 'of the moons orbit; which dragon likewiſe occaſions the eclipſes of the moon. 'This almoſt univerſal ſuperſtition, or prejudice, or darkened tradition, which prevails in America as in Aſia, certainly indicates one common origin of aſtronomical ideas, and even naturally points out 'that theſe muſt firſt have been formed in

'the

'the north, as from thence only could there 'poſſibly exiſt any ancient communication 'between Aſia and America, by which 'mankind could readily deſcend to all parts 'of the ſouth, for peopling America, Chi-'na, India, &c.'

Quitting theſe profane inſtances of the wanderings of human reaſon, and turning our reſpectful attention to the records of ſacred truth which have been dictated by the divine word, we find the whole ideas entertained by the ancients agreeing exactly with thoſe of the ſacred writers, by whom the ſerpent is frequently uſed in a ſymbolical ſenſe.

Great ſize, agility, and nimbleneſs of motion, ſtrength, deadly weapons, beauty, intelligence, and ſuperiority of inſtinct, have in all ages been attributed to ſerpents; and, in our endeavours to give a juſt notion of this numerous and extraordinary claſs of animals, we have only gathered together the ſcattered fragments of antiquity into one general view. This preliminary diſcourſe, therefore, is to be conſidered as an

Preliminary Discourse.

attempt to represent the great picture of these wonderful animals, as long ago painted by the ancients, our masters in so many arts and sciences; which picture we have endeavoured to free from the veil with which ignorance, fancy, and love of the marvellous, had obscured it, in the course of many ages; this veil of gold and silver tissue, which perhaps embellished the picture that was seen more obscurely through it, being only the contrivance of man, required to be burnt by the torch of truth, that its light might illuminate the work of nature.

NOMEN-

NOMENCLATURE, AND ARRANGEMENT OF SERPENTS.

Nomenclature, and arrangement.

WE have already ſeen, that, notwithſtanding the numerous reſemblances which ſubſiſt among the various ſpecies of ſerpents, they differ from each other in the ſhades and diſtributions of their colours, in the number, ſize, form, and arrangement of their ſcales, in their manners, habitations, and in the different kinds of food by which they are nouriſhed; and, as the ſpecies are conſiderably numerous, we have thought it neceſſary to diſtribute them into certain general diviſions, according to the differences which ſubſiſt in their external conformation and habits. From theſe differences we have inſtituted eight genera, containing above one hundred and forty ſpecies. Above an hundred and ſixty different ſerpents will be found deſcribed in this work; but as many of theſe may only turn out varieties, dependent on age or ſex, as we

Nomenclature, and arrangement.

ſhall have frequent occaſion to remark, we have limited the number of known ſpecies to about one hundred and forty.

The *firſt* genus contains ſuch ſerpents as have a ſingle row of large ſcales or ſhields on the belly, and two rows of ſmall plates on the under ſurface of the tail *. Theſe we ſhall name *Vipers*, the colubri of moſt of the latter Naturaliſts, particularly the celebrated Linnaeus.

The *ſecond* genus conſiſts of ſuch as have a ſingle row of large ſcales or ſhields on the whole under ſurface of the body, comprehending both the belly and the tail: This diviſion contains the largeſt ſpecies of ſerpents, for which we have retained the generic name of *Boa*, as uſed by Pliny, and moſt other authors, both ancient and modern. This name is derived from an ancient opinion, that ſome at leaſt of the ſpecies were addicted to the practice of ſucking the milk of cows *.

In

* The belly is to be conſidered as reaching from the throat to the vent or anus, and the tail from thence to the hinder extremity of the animal.—T.

* Aſſuntur primo bibuli lactis ſucco, unde nomen traxere. Plin. Hiſt. nat. xxviii. chap. 14.

Nomenclature, and arrangement.

In the *third* genus we have placed thoſe ſerpents which have large plates or ſhields under the belly and tail, having the tail terminated by moveable articulated ſcales, called *rattles* *, and from which the diviſion is named *Rattle-ſnakes*, the Crotalus of Linnaeus.

The *fourth* genus contains ſuch ſerpents as have the whole under ſurface of the body covered by ſcales ſimilar to thoſe on the back, and this diviſion we ſhall diſtinguiſh by the name of *Snake*, the Anguis of Linnaeus and other Naturaliſts.

The *fifth* genus conſiſts of thoſe which are entirely covered with rings of ſcales, which are denominated *Amphiſbena* by moſt naturaliſts.

The *ſixth* genus comprehends, under the generic name *Cecilia*, thoſe ſerpents which have the ſides of their bodies formed into naked wrinkles of annular folds.

The *ſeventh* genus contains certain ſerpents, of which the under ſurface of the

* The deſcription of theſe rattles will be given in the article Boiquira.

Nomenclature, and arrangement.

body near the head is covered by large ſcales or ſhields, the lower part of the belly, and upper part of the tail are ſurrounded by rings of ſcales, and the lower part of the tail is covered by common ſcales. To this diviſion we ſhall retain the name *Langaha*, uſed by the natives of the country where they are found.

In the *eighth* genus we ſhall place the ſerpent deſcribed by Mr Hornſtedt, under the name of *Acrochorde* of Java, which name may very properly be retained: Its diſtinguiſhing characteriſtic is having the ſkin covered with ſmall tubercles.

Linnaeus divided ſerpents only into ſix genera, to which we have here added two; the Langaha, firſt deſcribed by M. Bruyeres of the Montpellier Society, in the Journal de Phyſique for February 1784, and the Acrochorde, deſcribed by M. Hornſtedt in the Memoirs of the Academy of Stockholm for the year 1787, page 306.

All of theſe eight genera are diſtinguiſhable by external characters, which are permanent and eaſily obſerved. It were likewiſe

wiſe deſirable, that each of theſe could be ſubdivided into two ſubgenera, according to a very important difference, that of bringing forth their young alive, and that of producing eggs. In the former of theſe, the young ſerpents are hatched within the bodies of their mothers, a peculiarity of generation which we have already deſcribed under the name of *Viparous*, as contra-diſtinguiſhed from Viviparous and Oviparous animals: The latter ſubdiviſion would then contain only ſuch ſerpents as are produced from eggs that are hatched out of the body *, which are real oviparous animals. This very natural ſubdiviſion, which is founded on very conſiderable differences of internal ſtructure, and on a very remarkable fact in their natural hiſtory, ought certainly to form a part of every methodic arrangement intended to give diſtinct ideas of the name and quality of each ſpecies: Nomenclature, and arrangement.

* In the original, the former ſubdiviſion is named Vipers, and the lattter ſerpents; but as we have uſed the word ſerpent for the name of the whole claſs or order, and Viper for the firſt genus, the diſtinction is here noted by the terms viparous and oviparous.

Nomenclature, and arrangement.

But it would require for its eſtabliſhment, the diſcovery of ſome permanent and apparent external characters, by which to diſtinguiſh the ſeveral ſubdiviſions. M. de la Borde, correſpondent with the Royal Cabinet from Cayenne, an excellent obſerver of nature, believes to have aſcertained, that all the ſpecies of ſerpents of which the young are hatched within the mothers are venomous, and conſequently that all theſe have poiſon fangs, or moveable perforated teeth, ſimilar to thoſe of the common European viper. If this important obſervation, which we have verified on ſeveral ſpecies of viparous ſerpents, could be aſſured as conſtant in all thoſe which produce their young fully formed, and it could be equally proved, that all of thoſe ſerpents which produce eggs are deſtitute of moveable fangs, we might then adopt this circumſtance as a diſtinctive character of the propoſed ſubdiviſion into viparous and oviparous, in each of the genera of ſerpents. This character is likewiſe apparently connected with a particular conformation of the

Nomenclature and arrangement.

the jaws of such serpents as we have examined, and which we have reason to believe is constant. In all the species of vipers provided with moveable fangs which we have had occasion to examine, we have constantly found only one row of teeth in the upper jaw, which are hooked backwards; and on each side, and without these teeth, one of the true moveable fangs is placed; each of these fangs is hollow, and pierced with a small hole near each of its extremities, and is surrounded by a sheath from which it can be exserted at pleasure; at the base of each fang, there are two or three other similar fangs, usually a good deal smaller, which are intended to replace the principal one, if it should be destroyed or torn out by any accident *. In these venomous serpents, the lower jaw has likewise only one row of teeth; and the two separate bones which compose the lower jaw are always at a considerable distance from

* The structure of these poison fangs, and of the jaws, will be found more minutely described in the account of the Common Viper.

Nomenclature, and arrangement.

from each other at the muzzle, where they are joined only by the ſkin and muſcles, having each, at their extremity, one hooked tooth rather larger than the reſt, but neither hollow nor moveable like the real poiſon fangs.

In ſuch ſerpents as are deſtitute of real poiſon fangs, all the teeth in both jaws are more equal in ſize; the two bones forming the lower jaw are not indeed articulated, or joined together, but they are bent towards each other, and come ſo near at their extremities as almoſt to touch. The upper jaw has two rows of teeth, of which the external row ſeems to ſerve inſtead of the moveable fangs of the other ſpecies, and the inner row reaches very far back towards the fauces or throat. As, however, theſe moveable fangs may be ſometimes confounded with the fixed bent teeth of ſeveral of the ſpecies of ſerpents which are not viparous, a more external character, that is more eaſily obſervable, is much to be wiſhed for: With this view, we have carefully examined a great number of different ſpecies of the viper

per genus, and have obſerved that ſuch ſpecies as are provided with the moveable poiſon fangs, have the ſummit of their heads covered by ſmall ſcales, ſimilar to thoſe on the back; and that almoſt all the others have their heads covered by larger and very differently ſhaped ſcales, always nine in number, and placed in four regular rows, of which the firſt and ſecond row contained two ſcales each, the third three, and the fourth or hindermoſt two. Some venomous ſerpents, indeed, and conſequently poſſeſſing poiſon fangs, have ſometimes three ſcales a little larger than the reſt between their eyes; but we have only ſeen in the Naja, the nine large ſcales that are found on the greater part of viparous vipers, which are not venomous. It would require, however, a greater number of obſervations to eſtabliſh the above fact upon ſufficient ground, for employing it as a characteriſtic mark of ſubdiviſion even of vipers, and conſequently ſtill more in the other genera of ſerpents: We muſt therefore content ourſelves for the preſent, with

Nomenclature, and arrangement.

pointing

Nomenclature, and arrangement.

pointing out, in the hiſtory of each genus, as we go along, the particular ſpecies which are either known to be viparous, or which we conſider as ſuch, from their external conformation, their moveable fangs, and their poiſon; leaving to the accurate inveſtigation of future travellers and naturaliſts, to illuſtrate more diſtinctly the natural hiſtory of the ſpecies which are ſtill obſcure or hardly known.

As the viper genus is very numerous, and as conſequently its various ſpecies are by no means eaſily diſtinguiſhed from each other, we were anxious to have eſtabliſhed an additional ſubdiviſion, beſides that already mentioned, into viparous and oviparous; and for that reaſon wiſhed to have again ſeparated the oviparous vipers into two ſubdiviſions, founded on the differences in proportional lengths of the body and tail, and the thickneſs or ſlenderneſs of their tails; but, beſides that theſe proportions have been hitherto very little obſerved by travellers and naturaliſts, and that we ſhould therefore have been unable to arrange ſuch

ſpecies

Nomenclature, and arrangement.

ſpecies as we had not ſeen, there are reaſons to believe, that theſe proportions may vary in the ſame ſpecies according to age, ſex, and other circumſtances. We muſt therefore invite ſucceeding obſervers, to determine, by numerous compariſons, the extent of theſe variations in proportion; by which, hereafter, an exact ſubdiviſion on theſe principles may be formed. At preſent, we muſt be contented with endeavouring to indicate ſuch characters of each ſpecies as are very diſtinct and eaſily obſervable; ſo as to diminiſh, as much as poſſible, the difficulty which neceſſarily reſults from a great number of ſpecies in one genus. For that reaſon, we have eagerly obſerved every circumſtance, in external form and ſtructure, which could ſupply us with ſenſible marks or characters; as from want of employing every means of deſtinguiſhing the different ſpecies, naturaliſts and travellers have often been, and may ſtill be, much difficulted in aſcertaining them from each other. While young, ſerpents are frequently diſſimilar from adult individuals of the ſame ſpecies; differing

Nomenclature, and arrangement.

differing ſometimes in the ſhades and diſtribution of their colours, and though the general diſpoſition of their ſcales are conſtant, their numbers are ſometimes variable: The genus is always eaſily aſcertained; but the ſpecies is often difficult to determine, eſpecially when no other ſpecific character is employed than that adopted by moſt naturaliſts, and principally truſted to by Linnaeus. This character conſiſts in the number of large and ſmall plates, ſhields, or ſcales on the under ſurface of the body and tail; but we have reaſon to conclude, from numerous obſervations and compariſons, made on ſeveral ſpecimens of many ſpecies in the Royal Cabinet and other collections, that the number of theſe is ſubject to variation according to age, that they increaſe with the ſize of the individual, and even are influenced by ſeveral circumſtances or accidents. We have not, however, ventured to reject a character of ſuch ſimplicity and obviouſneſs, and which remains unimpaired after long preſervation in cabinets, while thoſe dependent on colour are ſo much

much ſubject to change in ſuch ſituations; but have retained it from its ſimplicity, and becauſe it is often the only one employed by authors for diſtinguiſhing ſuch ſpecies as we have not had occaſion to examine. We have always ſeparately enumerated the number of theſe plates or ſcales which are placed above and below the vent; and, as it is probable that the number of theſe two kinds ſhould both vary in the ſame ſpecies, one may ſerve to correct the other, where any error or variation occurs. Nomenclature, and arrangement.

We have not, however, truſted ſolely to this ſingle character, but have added other circumſtances for determining the various ſpecies with as much preciſion as poſſible; having, for that purpoſe, multiplied our obſervations upon a vaſt number of ſpecies and individual ſpecimens of the ſame ſpecies, by comparing together as many individuals of each ſpecies as we could procure, that we might aſcertain ſuch circumſtances as were conſtant from thoſe that are only variable or accidental. We have hardly ventured to employ ſhades of colour in forming our ſpecific characters;

Nomenclature, and arrangement.

characters; for these, which are by no means permanent and invariable in living individuals, are extremely liable to change in dried specimens, or such as are kept in spirits, in collections. Notwithstanding this constraint, we think we have succeeded in establishing distinct, obvious, and permanent characters, by means of nine different circumstances, which by their various combinations, with the number of larger and small plates on the under surface of the body and tail, may suffice for distinguishing very accurately the species of the most numerous genera; besides that we have sometimes been able to add a tenth mark, which is often equally permanent, and even more obvious than the other nine.

These characters are chiefly founded on the form of the scales. Though the plates or shields on the under surface of the body are mostly similar in form, being generally very long in proportion to their breadth, having usually six unequal sides, and differing chiefly from each other in the proportions of their length and breadth, the scales on the upper surface of the body are

by

by no means ſo uniform in the different ſpecies, and from theſe ſeven of our differential characters are derived. Some are hexagonal, others are oval, or lozenge ſhaped; ſome are flat and ſmooth, while others are formed into a prominent ridge; ſome ſcarcely touch or meet together, and others ride over each other like ſlates on a houſe top. The eighth ſpecific character is derived from the circumſtance of ſome ſpecies having the head covered with ſcales ſimilar to thoſe on the back, while others, as has been already mentioned, have nine larger plates or ſcales, arranged into four regular rows. Our ninth character is founded on the number of ſcales by which the jaws are covered. All theſe characters ſeem permanent in each ſpecies, ſo far as could be aſcertained by the moſt attentive examination of a vaſt number of individuals in many different ſpecies, and are entirely independent of age, or ſex, or circumſtances of preſervation in collections. Nomenclature, and arrangement.

Although the ſhades of colours are ſubject to variation in the ſame ſpecies, yet

Nomenclature, and arrangement.

their general distribution into spots, belts, stripes, streaks, &c. are considerably permanent; so that, in the same species, some individuals may have a whitish ground, with green spots, while in others the ground is yellow, with blue spots; but, in the same species, the spots are almost constantly distributed in the same manner. This general distribution of colours is hardly at all changed or injured in specimens which are preserved in collections, though the shades or particular colours may change naturally after the death of the animal, and are much liable to injury by the means used for preserving the specimens. Yet, as age and sex may produce considerable differences in this distribution of colours, we only employ this character with reserve, and in addition to the others already enumerated.

The systematic table of arrangement, which follows this article, is formed on these principles; and, for that reason, the species are not there arranged in the same order which we have thought necessary in the subsequent natural history of the several

ral ſpecies. In the natural hiſtory we have thought it neceſſary to ſeparate the viparous from the oviparous vipers; beginning the former with an account of the common viper, as the moſt generally known ſerpent in Europe, where almoſt every perſon has an opportunity of knowing or ſtudying its manners and habits; the natural hiſtory of the latter we have introduced with that of the green-and-yellow viper and the collared viper, which are both very numerous in France. On the contrary, we have endeavoured to arrange the ſyſtematic table ſo as to enable naturaliſts and travellers to aſcertain the different ſpecies with great facility; to determine whether ſuch as occur to them have been already deſcribed, or are new ſpecies. By this they will often ſave numerous compariſons with the deſcriptions of authors, which they would otherwiſe be obliged to make. The various ſpecies, in the firſt inſtance, are arranged according to one particular character, the plates or large ſcales which cover the under ſide of the body; beginning with thoſe ſpecies which have

Nomenclature, and arrangement.

Nomenclature, and arrangement.

the greateſt number of theſe ſcales. In enumerating the plates on the under ſurface of the body, we have never included thoſe large ſcales, uſually two or three, which ſeparate the belly from the region of the vent.

The following table is divided into ten columns. In the *firſt*, the names of the ſeveral ſpecies are given, as employed in the ſubſequent natural hiſtory, where the various ſynonimes will be found under each ſpecies. In the *ſecond*, we have placed the number of large plates or ſhields, or rows of ſmall ſcales, or ſcaly rings, which cover the under ſurface of the body of each ſpecies, or the number of folds or wrinkles on the ſides of the body, according to the genus to which the different ſpecies belong. We have already obſerved that the ſpecies in the different genera are placed conformably to the number of theſe plates, rows of ſcales, ſcaly rings, or lateral wrinkles, on each; ſo that any ſpecies deſcribed by us may readily be diſcovered at one glance, or any new ſpecies, or one ſuppoſed to be

ſuch,

Nomenclature, and arrangement.

ſuch, can eaſily be compared with the ſpecies which it moſt nearly reſembles. The *third* column contains the number of pairs of ſmall plates, or of large ſingle plates, or of rows of ſmall ſcales, or of ſcaly rows, on the under ſurface of the tail in each ſpecies, or the number of lateral wrinkles on the tail. The *fourth* column gives the total length of each ſpecies from the muzzle to the tip of the tail; and the *fifth* the length of the tail ſeparately. Theſe meaſures are frequently neither the longeſt nor the ſhorteſt of each ſpecies, but are merely taken from ſuch individuals as we have had occaſion to deſcribe, and are only intended to give the proportions which uſually ſubſiſt between theſe two meaſures. We have already obſerved that theſe meaſures or proportions are ſubject to variety in ſome ſpecies, according to differences in the ſex and age of the individuals; but, as they ſeem uniform in by far the greater number of ſerpents, or at leaſt have theſe variations confined within certain narrow limits, we have thought they might be fre-

Nomenclature, and arrangement.

quently uſeful for aſſiſting to aſcertain the ſpecies to which ſpecimens or individuals ought to be referred. The *ſixth* column expreſſes the known circumſtances relative to the moveable poiſon fangs. Such as have theſe murtherous weapons have the mark (†) in this column; thoſe which are known to be deſtitute of poiſon fangs have (o); and where this circumſtance is doubtful the column is left blank. The *ſeventh* column contains the circumſtances relative to the covering of the head; the arrangement of the large plates, where theſe are preſent, or the ſmall ſcales like thoſe on the back. In this column, the abridged expreſſion *nine in three rows* is uſed to ſignify that the plates on the head are large, and regularly arranged in four rows, already mentioned as being generally the caſe in vipers that have no venom: It is neceſſary, however, to obſerve, that in ſome ſpecies the middle piece of the third row, counting backwards, is ſometimes divided into two by a fiſſure, or ſuture, which might lead to a ſuppoſition of there being

ten

ten instead of nine of these pieces. In the *eighth* column, the form of the scales on the back is expressed; their figure, whether hexagonal, lozenge shaped, or oval: This may sometimes be subject to variety; but we have never seen different individuals of the same species in which some had these scales flat and others ridged. The *ninth* column contains such remarkable particulars as occur in the form or structure of the different species; and the *tenth* describes their colours. Nomenclature and arrangement.

In this last circumstance, the description of the colours of serpents, we have been more attentive to the general distribution than to the particular shades, as the former are much more to be trusted for their uniformity. Some particular colours, however, are very little subject to change in the living animals, and are even little injured by the various methods used for preserving specimens in collections; and these are more particularly noticed in the table. After all, however, it must always be considered, that hardly ever is one circumstance

Nomenclature, and arrangement.

to be confided in as aſcertaining the identity of a ſpecies; but recourſe muſt be had to the combinations of different characters united. The void ſpaces in the table are left where the circumſtances indicated, at the head of the ſeveral columns, are unknown, and may hereafter be filled up by the attention of future obſervers; their preſent imperfect ſtate being occaſioned by the bad preſervation of ſuch ſpecimens as we could procure, or by the incomplete deſcriptions of ſuch authors as we were obliged to truſt to, for thoſe we had no opportunity of examining perſonally.

It will readily occur, on reading the various articles of this work, that common black engravings are quite inadequate for conveying lively ideas of the various brilliant colours which occur on ſerpents, and ſtill leſs of the changing colours or irideſcences which ornament ſeveral ſpecies. A ſet of coloured plates of theſe animals are very deſirable; but ſuch are not to be made exact in any ſingle country, as the different ſpecies are ſcattered all over the globe, and very

very few of them can be tranſported alive, while the colours of many ſpecies are extremely liable to change after death. Such a work muſt therefore require a great number of years, as coloured drawings muſt be made from living ſpecimens, by good and accurate artiſts, in the native countries of the different ſpecies. Nomenclature, and arrangement.

It will be ſometimes found, that our deſcriptions give rather a different account of the diſtribution of colours from that repreſented in the engravings, ſince ſeveral of the drawings were neceſſarily made from ſpecimens in which the colours were injured by keeping, while our deſcriptions were always formed from the moſt authentic information that could be procured relative to the living animals: Sometimes, likewiſe, it was found impoſſible to repreſent the exact form of the ſcales in the engravings as deſcribed in the text.

FIRST

FIRST GENUS,

Serpents having large single plates on the under surfaces of their bodies, and pairs of smaller plates on the under surfaces of their tails.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Blue-and-yellow Viper.	312	93	9 feet.	
Two-spot Viper.	297	72	1 foot 8 inches 2 lines.	3 inches 10 lines.
Laced Viper.	250	35		
Molurus.	248	59	6 feet.	

VIPERS.

Named *Colubri* in Latin, and *Couleuvres* in French.

CHARACTERS CONTINUED.				
Poiſon fangs	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	large.			Having blue ſtreaks edged with yellow, which croſs each other, forming a net work on a blue ground.
o	nine in three rows.	ſmooth and lozenge-ſhaped.	The head very long, and broad behind.	Reddiſh brown; having ſmall irregular white ſpots, at conſiderable diſtances, edged with black; and two white ſpots behind the head.
o	nine in three rows.	ſmooth and rhomboidal.	The head as thick as the body.	The head white, with a black muzzle, and a black tranſverſe bar between the eyes: The upper part of the body black, with tranſverſe white bars, every third bar four times the breadth of the others.
o	nine in three rows.	ſmooth and oval.	The head very long, and broad behind.	Whitiſh; with a longitudinal row of large reddiſh ſpots edged with brown; and other almoſt ſimilar ſpots along the ſides.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Domeſtic Viper.	245	94		
Horſe-ſhoe Viper.	238	94		
Minervas Viper.	238	90		
Situla.	236	45		
Dhara.	235	48	almoſt 2 feet.	
Lance-ſhaped Viper.	228	61	1 foot 2 inches 2 lines.	2 inches 1 line.
Rough Viper.	228	44		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Having a bar, conſiſting of two black ſpots, between the eyes.
				Livid, with a number of reddiſh ſpots; having creſcent ſhaped ſpots on the head, a tranſverſe brown bar between the eyes, and an arched ſpot at the hind head.
				Sea-green; with a longitudinal brown ſtripe on the back, and three brown bars on the head.
				Grey; with a longitudinal ſtripe edged with black.
	nine in three rows.		The body is very ſlender.	Grey above, ſomewhat copper-coloured; all the ſcales edged with white; white underneath.
†	like thoſe on the back.	oval and ridged.	The top of the head is triangular and flattened.	Yellow or greyiſh, ſometimes marbled with brown and whitiſh; having a long deep brown ſpot behind each eye.
		ridged.		Waved with black and brown; having a black ſpot on the crown which divaricates backwards.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Spotted Viper.	227	60		
Flat-tailed Viper.	226	42	2 feet	2 inches 9 lines.
Reddiſh Viper.	224	68	1 foot 5 inches 4 lines.	3 inches.
Tigrine Viper.	223	67	1 foot 1 $\frac{1}{2}$ inch.	2 inches.
Cenco.	220	124	4 feet	1 foot 4 inches.
Whitiſh Viper.	220	50		
Netted Viper.	218	83	3 feet 11 inches.	10 inches.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Livid grey, with three rows of ſpots, the middle row red and the lateral rows yellow; the under parts whitiſh, with ſquare black blotches placed alternately at each ſide.
	nine in four rows.	ſmooth and rhomboidal.	The tail very flat at the ſides, and terminated by large ſcales.	Bluiſh-aſh; having large circular deep-brown belts.
	nine in four rows.	ſmooth and rhomboidal.		Reddiſh brown above, and whitiſh underneath.
†	like thoſe on the back.	oval and ridged.	The head is like that of the common viper.	Pale reddiſh brown, having dark ſpots edged with black.
	nine in four rows.	ſmooth and oval.	The head very thick, and almoſt globular; the body very ſlender.	Brown, with whitiſh ſpots; having ſometimes circular white belts.
				Whitiſh, with circular brown belts.
	nine in four rows.	oval and lozenge ſhaped.		The ſcales pale, with white edges.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Four-ſtripe Viper.	218	73	3 feet 9 inches.	8½ inches.
Broad-headed Viper.	218	52	4 feet 9 inches.	7 inches.
Black-and-reddiſh V.	218	31	1 foot 11 inches.	2 inches.
Green Viper.	217	122	2 feet 2 inches. 9 lines.	7 inches 1 line.
Dun Viper.	217	108	3 feet 2 inches. 6 lines.	1 foot.
Bluiſh Viper.	215	170		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales	Miſcellaneous characters.	Colours.
	nine in four rows.	oval and ridged; thoſe on the ſides ſmooth	Two pair of ſmall plates among the large plates.	Whitiſh, having four dark ſtripes; the two outermoſt uniting above the muzzle.
o	nine in four rows.	ſmooth and oval.	The muzzle terminated by a large almoſt vertical ſcale; thoſe of the back near the head a little ſeparated from each other.	Whitiſh, with large irregular dark ſpots, ſeveral of which run together; having longitudinally diſpoſed ſmaller ſpots on each ſide of the belly.
	nine in four rows.	ſmooth and hexagonal.	Sometimes the muzzle and top of the head are blackiſh.	Tranſverſe black bars alternating with reddiſh, uſually 22 of each; the latter edged with white and ſpotted with brown.
o	nine in four rows.	ſmooth and oval.		Green, brighter on the belly than the back.
o	nine in four rows.		The head long, with largiſh ſcales on the lips.	Dun, having ſometimes tranſverſe black bars; each ſcale on the back being half edged with white.
				Bluiſh, with a lead coloured head.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Chain Viper.	215	44	2 feet 6 inches.	6 inches.
Triangle Viper.	213	48	2 feet 7 inches 2 lines.	3 inches.
Apachycoatl.	212	102	1 foot 9 inches.	4 inches 9 lines.
Tyrie.	210	83		
Petola.	209	90		
Snowy Viper.	209	62	6 feet.	
Hadje.	207	109		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Very dark blue, with ſmall yellow ſpots in narrow tranſverſe rows; the belly blue, with ſmall ſquare yellow ſpots.
o	nine in four rows.	ſmooth and lozenge ſhaped.		Whitiſh; having a triangular ſpot containing a ſmaller triangle on the top of the head; a longiſh oblique black ſpot behind each eye; and irregular reddiſh ſpots edged with black on the back.
o	nine in four rows.	ſmooth and oval.		Blackiſh; with very irregular tranſverſe white bars.
				Whitiſh; with three longitudinal rows of brown rhomboidal ſpots.
o	nine in four rows.	ſmooth and oval.		Livid; with reddiſh tranſverſe bars.
†				Pure white.
				Black, with oblique white bars, half of each ſcale being white.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Green-and-yellow. V.	206	107	4 feet.	1 foot.
Dione.	206	66	3 feet.	6 inches.
Two-ſtreak Viper.	205	99	2 feet 1 inch.	6½ inches.
Egg-eating Viper.	203	73		
Milky Viper.	203	32	1½ foot.	1 inch 7 lines.
Brown-ſpot Viper.	202	96		
Muſky Viper.	200	140		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	ſmooth		Blackiſh-green, with ſmall yellow ſpots of different ſhapes, forming ſeveral longitudinal ſtreaks: The belly yellowiſh, having a black ſpot and dot at each end of each plate.
o				Grey, with three longitudinal white ſtreaks, and ſeveral longitudinal brown ſtreaks: The under parts whitiſh, with ſmall brown ſtreaks, and often dotted with reddiſh.
o	nine in four rows.	ſmooth and lozenge ſhaped.		The ſcales reddiſh, edged with yellow; having two longitudinal yellow ſtreaks.
†	nine in four rows.	hexagonal and ridged.		Milk-white, with black ſpots in pairs: The head black, with a narrow longitudinal white ſtripe.
				Having brown ſpots.
			Largiſh eyes, and the head particularly angular.	The head is bluiſh: The back has obliquely tranſverſe cloudy ſtreaks.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Cinereous Viper.	200	173		
Padera.	198	56		
Naja.	197	58	4 feet 4 inches 6 lines.	7 inches 10 lines.
Peruvian Viper.				
Brafilian Viper.				

CHARACTERS CONTINUED.

Poiſon fangs.	Head-ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Grey, with a white belly: The ſcales on the tail are edged with iron grey.
				White above; having ſeveral pairs of ſpots along the back, each pair joined by a ſmall ſtreak, and an equal number of ſingle ſpots along each ſide.
†	nine in four rows.	ſmooth and oval.	Has a membranous expanſion on each ſide of the neck.	Yellow; having a broad dark tranſverſe bar on the neck, from which a ſtreak, often edged with black, proceeds forwards, which divides to each ſide, and is turned outwards, ſo as to reſemble ſpectacles, on the widened part of the neck of the male.
	nine in four rows.		Has no expanſion on the neck.	Much the ſame with the former.
			Has a membranous expanſion on each ſide of the neck.	Bright reddiſh, with tranſverſe brown bars; having on the membranous expanſion a heart-ſhaped white ſpot, including four ſmall black ſpots.

SPECIES.	CHARACTERS.			
	Body plates	Tail plates.	Total length.	Length of the tail.
Thick-headed Viper.	196	77	2 feet 5 inches.	6 inches 3 lines.
Fierce Viper.	196	69	12 inches.	2 inches 2 lines.
Red-throated Viper.	195	102		
Trifcalis.	195	86	1 foot $4\frac{1}{2}$ inches.	3 inches 10 lines.
Coralline Viper.	193	82	3 feet.	
White-dotted Viper.	191	75		
Pied Viper.	190	125		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	ſmooth and oval.	The tail ends in a very ſlender tip.	Of a dark colour, with irregular tranſverſe clear bars.
†	like thoſe on the back.	oval and ridged.	A very large head.	Cinereous, with whitiſh ſpots.
o				Entirely black, with a blood coloured throat.
o	nine in four rows.	ſmooth and oval.		Sea-green; having four longitudinal reddiſh ſtreaks, uniting, as they go back, firſt into three, then into two, and laſtly, on the tail, into one.
†		Rounded forewards, and pointed behind.	The ſcales on the back are in 16 longitudinal rows, ſomewhat ſeparate.	Sea-green above, with three longitudinal reddiſh ſtreaks; whitiſh underneath, dotted with white.
				Brown, with white dots.
				Tranſverſely ſtreaked with black and white.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Brown-and-white V.	190	96	1 foot 6 inches.	4½ inches.
Shield Viper	190	50	4 feet.	
Purple Viper.	189	122		
Griſon.	188	70		
Pelias.	187	103		
Aſiatic Viper.	187	76	12 inches.	2 inches 3 lines.
Knot Viper.	186	92	7 feet.	
Swift Viper.	185	105	2 feet 10 inches 7 lines.	9 inches 7 lines.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	ſmooth and oval.		Whitiſh, with round brown ſpots that unite in ſome places; having two ſpots behind the eyes: Reddiſh underneath.
o			The large plates ſurround almoſt two-thirds of the body: The tail is triangular.	Black above and below; underneath having whitiſh ſpots almoſt ſquare, alternately to right and left; of which the tail has few.
				Purple, with black ſpots.
				White above, with reddiſh tranſverſe bars; having two very white ſpots on the ſides.
o				Black, with a brown hind head; green underneath, edged on each ſide by a yellow line.
o	nine in four rows.	ſmooth and rhomboidal.		Having longitudinal ſtreaks on the back; all the ſcales being edged with whitiſh.
o				Very deep blue, having ſometimes a white throat; being bluiſh or braſſy underneath.
o	nine in four rows.	ſmooth and oval.		Greeniſh; having two longitudinal rows of white oblong ſpots.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Toral length.	Length of the tail.
Clouded Viper.	185	85		
Laphiati.	184	60		
Nimble Viper.	184	50	1 foot 8 inches.	4 inches 3 lines.
Schokari.	183	144	2 feet.	6 inches.
Sibon.	180	85		
20th of Gronovius.	180	80		
Hydrus.	180	66	3 feet.	

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Clouded above with brown and cinereous; variegated underneath with brown and white.
				Grey or reddiſh, with tranſverſe white or yellowiſh bars, divided into two at each ſide: The crown white.
o	nine in four rows.	ſmooth and lozenge ſhaped.		Tranſverſe irregular bars alternately white and brown; the latter being ſometimes dotted with black.
o	nine in four rows.		very ſlender.	Cinereous brown, having four longitudinal white ſtripes; yellowiſh underneath, and dotted with brown towards the throat.
		rhomboidal.	The tail ſhort and ſlender.	Variegated above with brown and white; white underneath ſpotted with brown.
			Probably the ſame with the Sibon.	Variegated with brown and white.
o				Pale olive mixed with cinereous; having four longitudinal ſtreaks, and blackiſh ſpots diſpoſed in quincunx; ſpotted underneath with yellowiſh and blackiſh.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Olive Viper.	180	46		
Black-bar Viper.	180	43		
Aurora.	179	37		
Smooth Viper.	178	46	1 foot 9 inches 9 lines.	3 inches 3 lines.
Ibiboca.	176	121	5 feet $5\frac{1}{2}$ inches.	1 foot 7 inches 1 line.
Eſculapian Viper.	175	64	3 feet 10 inches.	9 inches 3 lines.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
†	like thoſe on the back.	oval and ridged.		Having large oval reddiſh ſpots edged with blackiſh, and other ſmall brown ſpots.
o	nine in four rows.	ſmooth and oval.	A black bar between the eyes.	Livid; with ſeveral tranſverſe black bars, ſome of which ſurround the body.
				Grey, with a longitudinal yellow ſtripe; the head being yellow, with red dots.
o	nine in four rows.	very ſmooth		Bluiſh, with two deep yellow ſpots behind the head; having two longitudinal rows of ſmaller ſpots, the ſpots of one row oppoſite the intervals of the other; a few ſpots on the ſides, and larger ſpots on the belly.
o	nine in four rows.	ſmooth and rhomboidal.	The ſcales on the back ſeparate from each other in ſome places.	The ſcales on the back are pale grey, edged with white.
o	nine in four rows.	oval and ridged; thoſe on the ſides ſmooth		Reddiſh; having a blackiſh longitudinal ſtripe on each ſide of the back, and a row of triangular whitiſh ſpots on each ſide of the belly.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
22d of Gronovius.	174	60		
Nasal Viper.	173	157	4 feet 9 inches.	1 foot 11 inches.
23d of Gronovius.	172	142		
Swiss Viper.	170	127	3 feet.	
Half-collar Viper.	170	85	1 foot 7 inches.	4 inches 10 lines.
Azure Viper.	170	64	2 feet.	5 inches 3 lines.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
			Seba, Muſ. ii. t. 33. f. 1.	Bluiſh-aſh colour.
o	nine in four rows.	ſmooth and rhomboidal.	A very lengthened ſcaly ſnout	Greeniſh; with four longitudinal ſtreaks on the body, and two on the belly.
				Blue; with a black line on each ſide.
o		oval and ridged.		Grey; with ſmall black ſtreaks on the ſides; having a longitudinal ſtripe compoſed of narrow paler tranſverſe ſtreaks.
o	nine in four rows.	longitudinally ridged, and lozenge ſhaped.		Brown, with ſmall tranſverſe whitiſh ſtripes; having three longiſh brown ſpots on the head, and three round white ſpots on the neck.
o	nine in four rows.	ſmooth and oval.		Blue; deep on the back, and very bright on the belly.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Collared Viper.	170	53	2 feet.	4 inches.
Hebrew Viper.	170	42		
White Viper.	170	20		
Streaked Viper.	169	84		
Daboy.	169	46	3 feet 5 inches.	5 inches 9 lines.
Three-ſtreak Viper.	169	34	1 foot 5½ inches.	2 inches 8 lines.
Boiga	166	128	3 feet	1 foot 5 inches.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	oval and ridged.	The ſcales on the ſides are ſmooth, and larger than thoſe on the back.	Grey; with two longitudinal rows of very dark ſpots, two rows more external of larger black irregular ſpots, and two large whitiſh ſpots on the neck: The belly is variegated with black, white, and bluiſh.
†				Reddiſh; having yellow ſpots edged with brown red, reſembling Hebrew characters.
o				White; uſually without ſpot.
o				Bluiſh; having four longitudinal brown ſtripes from the head to the extremity of the tail.
o	like thoſe on the back.	oval and ridged.		Whitiſh; having three longitudinal rows of large oval reddiſh ſpots, edged with black or brown.
o	nine in four rows.	ſmooth and lozenge ſhaped.		Reddiſh; with three longitudinal ſtreaks from the head to the upper part of the tail.
o	nine in four rows.	ſmooth.	very ſlender.	Blue changing to green; with three ſmall longitudinal golden yellow ſtreaks; having a ſmall white bar edged with black along the upper jaw.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Chaplet Viper.	166	103	1 foot 5 inches. 6 lines.	5 inches 6 lines.
Thread Viper.	165	158	1 foot 6 lines.	4 inches 6 lines.
25th of Gronovius.	165	74		
Girdled Viper.	165	35	1 foot.	1 inch 6 lines.
Bluet.	165	24		
Annulated Viper.	164	43	7 inches. 4 lines.	1 inch 5 lines.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	ſmooth and lozenge ſhaped.	The head thick, flattened on the top and at the ſides: The body very ſlender	Blue; with two longitudinal white ſtripes; between which a black ſtripe, with oval white ſpots and white dots placed alternate; having two longitudinal rows of black dots on the belly.
o	nine in four rows.	lozenge ſhaped and ridged.	The head large, and body very ſlender.	Black or livid above, and whitiſh underneath.
			Seba, Muſ. ii. t. 21. f. 3.	White, with dark tranſverſe bars.
o	nine in four rows.	ſmooth and rhomboidal.		White; having moſtly ſome ſcales ſpotted with reddiſh at their ends; with very deep tranſverſe bars encircling the body.
		oval.	The tail very ſlender.	The back ſcales half black half white: The belly white: The tail uniform deep blue.
o	nine in four rows.	ſmooth and lozenge ſhaped.		White; having tranſverſe blackiſh bars, uniting with ſimilar on the belly, but not exactly correſponding: The neck white and the top of the head blackiſh.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Springing Viper.	163	77		
Miliary Viper.	162	59		
Changeable Viper.	161	113	1 foot 6 inches.	
Malpolon.	160	100	1 foot 10 inches.	5 inches 6 lines.
28th of Gronovius.	160	60		
29th of Gronovius.	159	42		
Ridged Viper.	157	115		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Cinereous grey; having three longitudinal blackiſh ſtripes edged with deep black, the middle ſtripe broadeſt: The belly whitiſh.
o				The back and ſides brown, with a white ſpot on each ſcale: The belly white.
	nine in four rows.			Grey; with a longitudinal brown ſtripe, compoſed of ſmall tranſverſe zig-zag ſtreaks: The plates reddiſh, ſpotted with white, and partly edged with bluiſh.
o	nine in four rows.	oval and ridged.	The tongue is long and very ſlender: The body is very ſlender.	Blue; with longitudinal rows of very ſmall black ſpots; having a white ſpot edged with black on the crown of the head.
				Having black and white tranſverſe ſtreaks.
			Seba, Muſ. i. t. 33. f. 6.	Reddiſh brown, of different ſhades.
o			The back has an elevated ridge.	Leaden-coloured above; all the ſcales being edged with white: The under parts whitiſh.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Rhomboidal Viper.	157	70	1 foot 6 inches 9 lines.	4 inches 4 lines.
Sauritin.	156	121		
Greeniſh Viper.	155	144		A third of the total length.
Pale Viper.	155	96	1 foot 6 inches.	
Lebetin.	155	46		
Aſpic.	155	37	3 feet.	3 inches 8 lines.
34th of Gronovius.	153	50		
Cenchrus.	153	47	2 feet.	3 inches 7 lines.

CHARACTERS CONTINUED.

Poiſon fangs	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	oval and ridged.		Blue; having rhomboidal blue ſpots edged with black.
o			Very ſlender.	Brown; having three longitudinal white or green ſtreaks: The belly white.
o		ſmooth		Blue or green; the under parts green, more or leſs mixed with yellow.
o	nine in four rows.	ſmooth and oval.	The body and tail very ſlender.	Pale grey; having a number of brown dots and grey ſpots irregularly diſperſed, and a black line along each ſide.
†				Clouded: The under parts dotted with reddiſh-brown or black.
†	like thoſe on the back.	oval and ridged.		Having three longitudinal rows of reddiſh ſpots edged with black.
				White; with black ſtreaks and ſpots.
o	nine in four rows.	ſmooth and hexagonal.		Marbled with brown and whitiſh; having narrow irregular tranſverſe whitiſh bars.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Scythian Viper.	153	31	1 foot 6 inches.	1 inch 7 lines.
Dipſus.	152	135		
Mooriſh Viper.	152	66		
Black Viper.	152	32	2 feet 9 lines.	2 inches 4 lines.
Sirtalin.	150	114	2 feet.	3 inches 9 lines.
Triangle-headed Viper.	150	64		
Cobel.	150	54	1 foot 4 inches 9 lines.	3 inches 10 lines.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
†			The head is ſomewhat heart ſhaped.	Black above, and very white underneath.
†		oval.	The tail is long and very ſlender.	The ſcales bluiſh, with whitiſh edges; the plates white; having a longitudinal bluiſh ſtreak underneath the tail.
o	nine in four rows.	oval and ridged.		Brown; having longitudinal ſtreaks, from which proceed tranſverſe black bars to the belly, which is black.
†	three in two rows.	oval and ridged.		Black; having ſometimes ſpots of a deeper black, diſpoſed as on the Common Viper.
o		ridged.		Brown; with three longitudinal green ſtreaks changing to blue.
†	like thoſe on the back.	ſmooth and lozenge-ſhaped.	The head almoſt triangular, with a ſlender neck.	Greeniſh; having ſpots of various figures on the head, which unite into an irregular longitudinal ſtripe on the body: The plates are dark coloured, with whitiſh edges.
o	nine in four rows.			Cinereous grey; having a number of ſmall white oblique ſtreaks; ſometimes an oblique livid ſpot behind each eye, and tranſverſe whitiſh ſtreaks on the back.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Three-row Viper.	150	52	1 foot 10 lines.	4 inches.
Cherſea.	150	34		
Browniſh Viper.	149	117		
33d of Gronovius.	149	63		
Melanis.	148	27		
White-lip Viper.	147	132		
Saturnine Viper.	147	120		
Horned Viper.	147	63	2 feet	4 inches 6 lines.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	oval and ridged.		Whitiſh; having three longitudinal rows of dark ſpots: The belly variegated with brown and whitiſh.
†	like thoſe on the back.	ridged.		Steel grey; having a heart-ſhaped black ſpot on the head, and a row of round black ſpots on the back.
o				Cinereous mixed with brown; having a long brown ſpot behind each eye.
				White; with tranſverſe black ſtreaks.
†				Black: The under parts ſteel grey, with darker ſpots; having bluiſh cloudy ſpots about the throat and on the ſides.
o			Very ſlender.	Bright blue mixed with cinereous; having white lips.
o			The eyes rather large.	Clouded with livid and cinereous: The head leaden-coloured.
†	like thoſe on the back.	oval and ridged.	A ſmall horn above each eye.	Yellowiſh; with irregular tranſverſe bars, darker in ſome and lighter in others.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Common Viper.	146	39	2 feet.	4 inches.
Sipedon.	144	73		
Chaiqua.	143	76		
Violet Viper.	143	25	1 foot 5 inches 3 lines.	2 inches 3 lines.
Ribbon Viper.	142	78		
36th of Gronovius.	142	60		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
†	like thoſe on the back.	ridged.		Cinereous grey; having blackiſh ſpots, forming a zig-zag ſtripe.
				Brown.
†				Having two longitudinal whitiſh ſtripes; two black dots on each plate; and nine round blackiſh ſpots on each ſide of the neck in the male.
o	nine in four rows.	ſmooth and lozenge ſhaped.		Violet: The under parts whitiſh, with irregular violet ſpots placed alternately to right and left.
o		oval and ſmall.	The head very long, and broad behind.	Whitiſh, with ſeveral longitudinal black or brown ſtreaks: The head black, with ſeveral ſmall twiſted white lines: The plates edged with brown: A white notched longitudinal ſtreak underneath the tail.
			Seba, Muſ. ii. t. 35. f. 4.	Bluiſh: The great plates whitiſh, with black ſpots; having a ſlight longitudinal furrow.

SPECIES.	CHARACTERS.			
	Body plates.	Tail. plates.	Total length.	Length of the tail.
Amodytes.	142	33		
Symetric Viper.	142	26	1 foot $5\frac{1}{2}$ inches.	2 inches 3 lines.
Black-headed Viper.	140	62	2 feet 1 inch 7 lines.	4 inches 6 lines.
Typhius.	140	53		
Calmar.	140	22		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
†	like thoſe on the back.	ſmooth and oval.	A ſmall moveable eminence and two tubercles on the muzzle.	Having a row of black ſpots, forming a notched longitudinal ſtripe.
o	nine in four rows	ſmooth and oval		Dark coloured; having a row of ſmall black ſpots on each ſide of the back near the head: The belly is elegantly marked with whole and half tranſverſe bars, arranged with great ſymmetry.
o	nine in four rows.	ſmooth and oval.		Brown, with a black head: The under parts varied with whitiſh and very dark, in tranſverſe rectangular ſpots.
				Bluiſh.
o				Livid; having tranſverſe brown bars and rows of brown dots: The under parts adorned with almoſt ſquare ſpots ſymmetrically arranged: A longitudinal flame yellow ſtreak underneath the tail.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Ibibe.	138	72	2 feet.	4 inches 10 lines.
Queen Viper.	137	70		
Punctuated Viper.	136	43		
38th of Gronovius.	136	39		
39th of Gronovius.	135	42		
Mexican Viper.	134	77		
Lutrix.	134	27		
Bloody Viper.	132	22	1 foot 4 inches 5 lines.	1 inch 10 lines.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	oval and ridged.	Sometimes having 4 large plates between the vent and the pairs of tail plates.	Blue or green, ſpotted with black; having a row of black dots along each ſide, and ſometimes a ſtripe along the back.
				Brown above, variegated underneath with black and white.
				Cinereous grey: The under parts yellow, with three rows, each conſiſting of three black ſpots.
				Variegated with iron grey, blue, and white.
				White, with black and white ſpots.
				Yellow above and below: The ſides bluiſh.
†	nine in four rows.	ſmooth and lozenge-ſhaped.		Red, with white ſpots.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Bali.	131	46	6 feet 6 inches.	
Atropos.	131	22		
Wampum.	128	67	1 foot 10 inches.	6 inches.
Striated Viper.	126	45		
Snubby Viper.	124	46		
Alidras.	121	58		
Green-and-blue Viper.	119	110	2 feet.	6 inches.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	ſmooth and rhomboidal.		Yellow mixed with white; having a longitudinal red ſtripe ſpotted with white on each ſide, and four longitudinal rows of yellow dots on the belly.
†	like thoſe on the back	oval and ridged;	The head is ſomewhat heart ſhaped.	Whitiſh; having four longitudinal rows of round reddiſh ſpots with white centers: The head ſpotted with black.
o	nine in four rows.	oval and ridged.	The head is ſmall in proportion to the body.	Blue; with tranſverſe white bars, which are each ſplit in two at the ſides; each large plate has a ſmall tranſverſe brown ſtreak.
o				Brown above, and pale underneath.
			The head is round, with an elevated protuberance; and the muzzle very ſhort.	Black and white above, and black underneath; having a white croſs with a black dot in the middle on the top of the head, and a ſmall curved black bar between the eyes.
				Bright white.
o	large.			Deep blue above, and pale green underneath.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Spotted Viper.	119	70	2 feet.	5 inches 4 lines.
Lady Viper.	118	60		
Egyptian Viper.	118	22		
Angular Viper.	117	70	1 foot.	
Leberis.	110	50		
Chubby Viper.	107	72		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	nine in four rows.	hexagonal and ridged.		Whitiſh; with large irregular lozenge-ſhaped reddiſh ſpots edged with black or brown: The belly is whitiſh, and is ſometimes ſpotted.
o				White; with irregular tranſverſe black bars: An irregular longitudinal blackiſh ſtripe on the belly.
†		very ſmall.	Two eminences on the back of the head.	Livid white, with reddiſh ſpots.
o	nine in four rows.	oval and ridged.	The back ſcales are ſlightly notched.	Whitiſh; having brown bars which are blackiſh towards their edges, and grow very broad and angular about the middle of the body.
†				Having narrow tranſverſe black ſtreaks: The head is white, with two reddiſh ſpots on the crown, and a triangular ſpot on the muzzle.
				Reddiſh; with tranſverſe white bars.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Argus.				

SECOND GENUS.

Serpents which have large plates on the whole under side of the body, both above and below the vent.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Embroidered Boa.	290	128	3 inches 6 lines.	7 inches.
Brown Boa.	281	64		
Grey Boa.	270	115		

CHARACTERS CONTINUED.				
Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
			Two eminences on the back part of the head.	Having ſeveral rows of white ſpots, edged with red, and with red centers; and a white ſpot on each ſcale.

BOA.

Named Boa *in Latin and French.*

CHARACTERS CONTINUED.				
Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	like thoſe on the back.	ſmooth and rhomboidal.	Having the head broad behind, with a long muzzle.	Having a chain of irregular ſpots, reſembling embroidery, along the back, and particularly on the head.
				Brown.
			The teeth in the lower jaw are very long.	Grey, mixed with paler.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Yellow Boa.	265	57		
Murine Boa.	254	65	2 feet 6 inches	4 inches 2 lines.
Schytale.	250	70		
Enormous Boa.	246	54	ſometimes above 30 feet.	uſually the 9th part of the whole.
Dumb Boa.	217	34		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Bright yellow; with whitiſh ſpots, which are grey in the middle.
o	like thoſe on the back.	ſmooth and rhomboidal.	The head broad behind; the muzzle long; large ſcales on the lips.	Whitiſh, or ſea-green; having five longitudinal rows of reddiſh ſpots, ſeveral of which have ſmaller whitiſh ſpots.
				Grey, mixed with green; having round black ſpots along the back, and ſpots along each ſide which are black at the edges and white in the middle: The belly having longiſh ſpots compoſed of ſmall black dots.
o	like thoſe on the back.	ſmooth and hexagonal.	The muzzle is long, and ends in a large vertical ſcale; the head is broad behind; the forehead high; and the head has a longitudinal furrow.	Marked with large oval ſpots, often notched at each end and ſemicircular, which are edged with darker colour, and ſurrounded by ſmaller ſpots.
†			The end of the tail underneath has four rows of ſmall ſcales.	Having rhomboidal black ſpots, which run together.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Bojobi.	203	77	2 feet 11 inches.	7 inches.
Hipnale.	179	120	1 foot 11 inches.	3 inches.
Hog-nosed Boa.	150	140	2 feet.	8 inches.

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	like thoſe on the back.	ſmooth and rhomboidal.	The head is broad behind; the muzzle long; and the lips are covered by large furrowed ſcales.	Green or orange; having diſtant irregular white or yellowiſh ſpots, which are edged with red.
o	like thoſe on the back.	ſmooth and rhomboidal.	The lips are covered by very large furrowed ſcales.	Yellowiſh; having whitiſh ſpots, edged with dark brown, almoſt black.
o	like thoſe on the back.			Cinerous; with regular black ſpots: Having tranſverſe yellow bars towards the tail.

THIRD GENUS.

Serpents which have large plates on the belly; their tails being terminated by a large ſcaly appendage, or by horny proceſſes which articulate into each other, being moveable ſo as to rattle.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Boiquira.	182	27	4 feet 10 lines.	4 inches.
Duriſſus.	127	21	1 foot 5 inches 6 lines.	1 inch 3 lines.
Drynas.	165	30		

RATTLE-SNAKES.

Called Crotali *in Latin, and* Serpens à Sonnettes *in French.*

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
†	ſix in three rows.	oval and ridged.		Yellowiſh grey; having a longitudinal row of black ſpots edged with white.
†	ſix in three rows.	oval and ridged;		Variegated with white and yellow; having rhomboidal black ſpots, white in the center.
†	two very large.	oval and ridged.		Whitiſh; with yellow ſpots of different ſhades.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Millet.	132	32	15 inches 10 lines.	1 inch 10 lines.
Fiſher.			5 feet.	

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
†	nine in four rows.	oval and ridged.		Grey; with three longitudinal rows of black ſpots; the middle row having red centers, and being ſeparated from each other by red ſpots.
†			The tail ends in a long hard point.	Brown; the belly and ſides of the neck being black, with irregular tranſverſe yellow bars.

FOURTH GENUS.

Serpents having the belly and under surface of the tail covered by scales like those on the back.

SPECIES.	CHARACTERS.			
	Body scales.	Tail scales.	Total length.	Length of the tail.
Cylindrical Snake.	240	13	2 feet 6 inches.	1 inch.
Red Snake.	240	12	1 foot 6 inches.	6 lines.
Wormlike Snake.	230	7	8 inches 11 lines.	1½ line.

SNAKES.

Called Angues *in Latin and French.*

CHARACTERS CONTINUED.				
Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	three large.	ſmooth		The ſcales are white, with brown-red edges; and the body is marked with tranſverſe dark bars, ſeveral of which run together.
o	three large in two rows.	ſmooth and hexagonal.		The ſcales are red, with white edges; and the body both above and underneath is marked with tranſverſe blackiſh bars.
ſeldom any teeth.	three large.	very ſmall and ſmooth	The mouth under the muzzle; both it and the vent very ſmall.	Of a livid white both above and underneath.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Nasal Snake.	218	12		
Thin tailed Snake.	200	50		
Horned Snake.	200	15		
Miguel.	200	12	1 foot	3 lines.
Arrow Snake.	186	23		
Viperine Snake.	180	18		

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
			The muzzle very long, with the mouth underneath: The tail ends in a hard point.	Greeniſh-black above and yellow underneath; having a yellow ſpot on the muzzle, and two oblique yellow bars on the tail.
			The tail much flattened at the ſides, and ending in a point.	Pale; with tranſverſe brown bars.
			Having two teeth which pierce the upper jaw, and reſemble ſmall horns.	
o	nine in four rows.	ſmooth		Yellow; having one or three longitudinal brown ſtreaks, with very narrow brown tranſverſe bars.
			The belly ſcales are rather larger than thoſe on the back.	
	large.			Variegated with brown and pale.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Netted Snake.	177	37		
Meleager.	165	32		
Orvet.	135	135	3 feet.	1 foot 6 inches.
Brown-and-yellow Sn.	127	223	1 foot 6 inches.	1 foot 1 inch 6 lines.
Eryx.	126	136		ſomewhat longer than the body.
Flat-tailed Snake.			1 foot 6 inches.	

CHARACTERS CONTINUED.

Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Brown ſcales, white in the center.
				Greeniſh; having ſeveral longitudinal rows of black or brown dots.
o	nine in four rows.	ſmooth and hexagonal.		The ſcales on the back are reddiſh with white edges; having four black or brown longitudinal ſtreaks: The belly is very deep brown: The throat is marbled with white, black, and yellowiſh.
				Green mixed with brown; having ſeveral longitudinal rows of yellow dots: The belly is yellow.
o		round and ſmooth	The upper jaw ſomewhat more projecting than the under.	Reddiſh-aſh; having three longitudinal black ſtreaks.
no teeth.		very ſmall, round, and placed at each others ſides.	The tail is flattened at the ſides, and ſomewhat round at the end.	Black above, and white underneath; having the tail variegated with black and white.

FIFTH GENUS.

Serpents having the body and tail ſurrounded by rings of ſcales.

SPECIES.	CHARACTERS.			
	Body rings.	Tail rings.	Total length.	Length of the tail.
White Amphiſbaena.	223	16	1 foot 5 inches 9 lines.	1 inch 6 lines.
Sooty Amphiſbaena.	200	30	1 foot 1 inch 6 lines.	6 lines.

AMPHISBÆNA.

Named Amphiſbaenae *in Latin, and the ſame ſlightly altered in French.*

CHARACTERS CONTINUED.				
Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
	ſix in three rows.		Has eight tubercles near the vent.	White.
o			Has eight tubercles near the vent.	Blackiſh, variegated with white.

SIXTH GENUS.

Serpents, having a longitudinal row of folds on each side.

SPECIES.	CHARACTERS.			
	Body folds.	Tail folds.	Total length.	Length of the tail.
Glutinous Cecilia.	340	10		
Ibicarum.	135		1 foot	

CECILIA.

Named Caeciliae *in Latin, and* Caeciles *in French.*

CHARACTERS CONTINUED.				
Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
				Brown; having a whitiſh ſtripe on each ſide.
			The upper jaw has two ſmall barbs. The tail is very ſhort.	

SEVENTH GENUS.

Serpents, having large plates on the belly near the head, and rings of ſcales towards the vent; the end of the tail being covered underneath with ſmall ſcales.

SPECIES.	CHARACTERS.			
	Large plates.	Rings of ſcales	Total length.	Length of the tail.
Only one ſpecies.	184	42	2 feet 8 inches.	

EIGHTH GENUS.

Serpents having the body and tail covered by ſmall tubercles.

SPECIES.	CHARACTERS.			
	Body plates.	Tail plates.	Total length.	Length of the tail.
Only one ſpecies.			8 feet 3 inches.	11 inches.

LANGAHA.

The ſame name uſed in Latin and French.

CHARACTERS CONTINUED.				
Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
†	ſeven in two rows.	rhomboidal.		Reddiſh ſcales, having near the baſe of each a ſmall grey circle, and a yellow dot.

ACHROCHORD.

Named Acrochordus *in Latin, and* Acrochorde *in French.*

CHARACTERS CONTINUED.				
Poiſon fangs.	Head ſcales.	Back ſcales.	Miſcellaneous characters.	Colours.
o	ſmall and very numerous.		The tail very ſlender.	Black above, and whitiſh underneath; the ſides being whitiſh with black ſpots.

FIRST GENUS.

VIPERS.

Having large plates on the under ſurface of the body, and pairs of ſmaller plates on the under ſurface of the tail.

Vipers.

WE have already obſerved that this genus may be ſubdivided into viparous, or ſuch as produce their young completely formed, and oviparous, or ſuch as produce eggs from which the young are hatched out of the body of the mother: And in this order it is our intention to treat of the numerous ſpecies of this genus.

It may be here premiſed, that many of the names uſed by modern authors for the various ſpecies of ſerpents were uſed for the ſame purpoſe by the ancients; ſuch are Berus, Preſter, Aſpic, Boa, Padera, Caecilia, Miliaris, Triſcalis, Dipſas, Drynus, Elops, Molurus, Schytale, &c. But the ancient writers,

D. Lizars Sculp.

1. Common Viper, Sp. 1–2. Cerastes, Sp. 9.

writers, who uſed theſe names, have given ſuch vague deſcriptions of the ſpecies to which they were applied, that it is ſeldom poſſible to recogniſe them; there is even reaſon to believe, that they have not even appropriated theſe names diſtinctly to different ſpecies, but have often uſed them to denote mere varieties, according to the age or ſex, of theſe ſpecies which were common in Europe, particularly in Greece. Vipers.

I. SUBDIVISION.

VIPAROUS VIPERS, or Vipers which produce their young completely formed.

SP. I. *COMMON VIPER* *.

IN this order or claſs of animals, to which the general name of ſerpents has been given, by far the greateſt number of animals Common Viper.

* Vipère. Encyclop. Method. Bomar. Dict. in Voc. Εχις, for the male, Εχιδνα, for the female, in Greek.—Viper or Adder, in Engliſh.

Coluber

Common Viper.

mals poſſeſſed of poiſonous juices, by which death may be inflicted to other animals, are found. It muſt not be ſuppoſed, however, that the greater number of ſerpents are endowed with this mortal quality; for, we have even reaſon to preſume that not more than a third of the claſs are venomous. Theſe dangerous ſpecies are the moſt important for us to know, that they may be avoided; and we ſhall, therefore, begin our account of each genus of ſerpents by the hiſtory of thoſe ſpecies which poſſeſs the property of communicating mortal or dangerous wounds, by the inſtillation of poiſon through their hollow fangs, which being almoſt conſtantly concealed in a kind of ſheath, are thereby the leſs liable to raiſe ſuſpicion.

Among the venomous ſpecies of this ſubdiviſion of the firſt genus, one of the beſt

Coluber Berus. Syſt. nat. ed. Gmel. i. 1090. G. 125. Laurent. Amph. 97. n. 216. t. 2. f. 1. Wulf. Ichth.—Vipera. Ray, Synopſ. 285. Geſn. Serp. 71.—Vipera anglica. Petiv. Muſ. 17. No. 103.—Vipera vera. Seba, Muſ. ii. t. 8. f. 4.—Viper. Brit. Zool. iii. 25. n. 12. t. 4. Owen, Nat. Hiſt. of Serp. 51. t. 1.

beſt known and moſt anciently deſcribed is the common viper or adder. This animal is extremely numerous in Europe, being found in every diviſion of it, eſpecially infeſting the woods and heaths, and even penetrating into the dwellings of mankind. It has therefore at all times been an object of terror, and yet has been conſidered with very great attention, having been diſſected, deſcribed, and ſubmitted to numerous and important experiments by many curious obſervers of nature. On that account, we have been determined to begin the Natural Hiſtory of Serpents by that of the common viper; as its form and ſtructure, both external and internal, its properties and habits, can be clearly deſcribed, and may therefore be employed with great advantage for illuſtrating the other ſpecies, which we ſhall have frequent occaſion to compare with it in the ſequel, and of which we may thereby be enabled to inveſtigate, or at leaſt to gueſs at with great probability, many of their organs and properties, not yet thoroughly aſcertained, by their analo-

Common viper.

Common Viper.

gy with this well known and clearly described species.

Though small, weak, and apparently harmless, the common viper is in reality extremely dangerous, in consequence of the venom with which it is provided. It seems to possess but a very small portion of the brilliant properties which we have formerly ascribed in general to the class of serpents; having neither beautiful colours, nor elegant proportions, nor agile movements; so that it would probably have been very little noticed and scarcely known, were it not on account of the mortal poison which it prepares and dispenses to man and other animals. The total length of the common viper is usually two feet, of which the tail is generally two or three inches, and is for the most part both longer and larger in the male than the female. Its colour is cinerous grey, having a kind of chain composed of irregularly shaped blackish spots from the head along the back to the extremity of the tail; which spots run together in several places, forming on the

Common Viper.

the whole an indented or zigzag ſtripe; and on each ſide there is a longitudinal row of ſmaller diſtinct blackiſh ſpots, each of which is placed oppoſite to one of the notches or vacancies of the zigzag on the back. All the ſcales on the upper ſurface of the body and the ſides have a raiſed longitudinal ridge on their middles, except the laſt row on each ſide, adjoining the belly, which are ſmooth, and ſomewhat larger than the others. The large plates which cover the belly or under ſurface of the body, and the pairs of ſmall plates which cover the under ſurface of the tail, are of a ſteel grey colour, darker or lighter in different individuals. In moſt of the individuals which we have examined, there were 146 large plates on the belly above the vent, and 39 pairs of ſmall plates on the under ſurface of the tail *. In the anatomical deſcription of the common viper, given in the Memoirs towards a Natural

* In the Syſtema Naturae, theſe numbers are given as characteriſtic of the ſpecies; but two other ſets of numbers are mentioned, 148.—42, and 177.—68.—T.

Common Viper.

Hiſtory of Animals, it is ſaid, 'That from 'the beginning of the neck to the begin-'ning of the tail, the number of large plates 'exactly tallies with the number of verte-'brae; and, as a rib proceeds from each 'ſide of each vertebra, each plate, at its 'two lateral extremities, meets with the 'points of two ribs, to which it ſerves as a 'ſupport and defence †.'

In this and a great many other ſpecies of ſerpents, both on the large plates and all the other ſcales, that part of the plate or ſcale which is covered by the next plate or ſcale is often paler or whiter than the reſt. But this is for the moſt part only obſervable in living individuals, or in dried ſpecimens; as, in ſuch as are preſerved in ſpirits, the uncovered parts of the ſcales are uſually lighter than ſuch as are covered, in conſequence of being more expoſed to the action of the ſpirit, which injures moſt colours. This paleneſs of the covered parts is probably occaſioned by the want of light, the action of which, on the colours of the ſcales

† Mem. pour ſervir à l'Hiſt. Nat. des Anim. iii. 108.

Common Viper.

ſcales of ſerpents, ſeems analogous to that on the petals or flower leaves of plants.

The head is broad behind, and tapers forewards, ending in a round muzzle. The top of the muzzle and the ſpace between the eyes are blackiſh; behind which, on the crown of the head, are two long blackiſh ſpots placed obliquely, and uniting forewards in an acute angle. The edges of the jaws are covered by ſcales, which are larger than thoſe on the back, forming a conſiderably projecting margin, and are ſpotted or variegated with whitiſh and blackiſh.

As it may be uſeful to give a diſtinct account of the internal ſtructure of the common viper, in which it is very ſimilar to moſt ſerpents, we ſhall here copy the anatomical deſcription given by M. Charas *, the exactneſs of which we can vouch for, having repeatedly verified his obſervations on the ſubject.

" The muzzle is compoſed of a bone partly cartilaginous, to which are attached

* Mem. pour ſervir à l'Hiſt. Nat. des Anim. iii. 611.

Common Viper.

the ends of ſome muſcles that reach from ſome diſtance, and which are accompanied by ſome ſmall arteries and veins. This bone is covered by the ſcaly ſkin, which is tucked in at the two ſides of the muzzle. At each ſide there is a paſſage for the noſtrils, which are ſmall and round, having each its particular olfactory nerve, which originates on the anterior part of the brain, and reaches to the orifice of each noſtril. The cartilaginous bone of the muzzle is of an angular form all round, and is articulated on every ſide to the anterior hollow part of the cranium or ſkull by ſtrong ligaments, which admit of ſome degree of motion.

" The fore part of the ſkull is hollowed, and when the muzzle is removed has the ſhape of a heart; having two proceſſes or points projecting forward, which embrace and retain the bone of the muzzle. On its upper part, it is ſurrounded by a ſmall projecting ridge, and is hollowed on each ſide to form the orbits of the eyes, which are pointed at their anterior and poſterior extremities.

Common Viper.

tremities. The whole ſkull is very hard and firm, having there principal ſutures on its upper ſurface; one of theſe, which may be called the ſagittal ſuture, divides it it length-ways above the eyes; the ſecond may be named coronal, and divides it acroſs behind the orbits; and the third, correſponding with the lambdoidal, divides it acroſs near the beginning of the back bone. On the middle of the upper ſurface of the ſkull, or cranium, there is a diſtinct repreſentation of a heart, having its baſe near the coronal ſtructure, and its apex turned back towards the third or lambdoidal ſuture. Beſides theſe, there is another principal ſuture all round the ſides of the inferior part of the ſkull, dividing it into two portions, a ſuperior and inferior: The latter is oblong and ridged below, its upper ſurface being hollow, ſomewhat ſhaped like a ſhoe or ſandal, having latches or proceſſes at each ſide, and having the ſharp point advancing between the orbits; the hinder part of this hollow reaches to the back of the mouth, having a deſcending pit, like a

ſmall

Common Viper.

ſmall hollow cone with the apex downwards. All the ſutures are ſo exceedingly well joined, as to be ſcarcely diſcernible, and are very difficultly ſeparated, unleſs the ſkull has been previouſly boiled for ſome time.

"The brain is divided into five principal bodies; the two moſt advanced being lengthened ſpheroids; which are placed between the eyes, and from theſe the olfactory nerves proceed. The other three are ſhaped like pears, having their ſmall ends turned forwards, and are ſituated in the middle part of the ſkull, under the heart ſhaped figure formerly deſcribed as appearing on the ſummit of the hard: Two of theſe are ſituated above the third, being placed one at each ſide; and the third, which is a little ſmaller, and may be conſidered as the cerebellum, is placed under the junction of the other two. The medulla oblongata ſeems a continuation of the ſubſtance of the laſt mentioned portion, though it has a ſeparate cell in the hinder part of the ſkull; it is whiter, and rather

ſofter

Common Viper.

ſofter than the other portions of the brain, being about the thickneſs of a ſmall grain of wheat. From this the ſpinal marrow, of the ſame kind and ſubſtance, extends through all the vertebrae to the extremity of the tail. The brain is covered by a tolerably thick coat or dura mater, which adheres with ſome force, and is of a black colour; from which latter circumſtance, ſome authors, without being at the trouble to remove it, have aſſerted, that the brain of the viper was black. Under this covering, each ſeparate portion of the brain has a diſtinct thin membrane, or pia mater. Certain ſmall interſtices are obſervable between the ſeveral portions, and even within the ſubſtance of the medulla oblongata, which may be conſidered as ventricles; and, but for its extreme minuteneſs, we might probably be able to trace all the parts which are deſcribed in the brains of much larger animals.

" On each ſide of the heart ſhaped mark, formerly deſcribed on the upper ſurface of the ſkull, and ſtrongly articulated to it, there

Common Viper.

there is a small flat bone near a line and half in length; these are continued to the hinder part of the skull, where each is articulated to another flat bone, which is longer and stronger, forming an elbow or angle at their junction; these two posterior bones turn downwards, and one on each side is strongly articulated with the lower jaw, and along with this joint, and between these two bones the upper jaw is on each side articulated with the lower: The connection, however, between the two jaws is not so strong as between the lower jaw and these two bones which descend from the crown of the head. These bones, which are a kind of clavicles, support the jaws, and assist in opening and shutting them; for which purpose they are provided with proper muscles and tendons.

"At the anterior angle of each orbit, there is a small flat bone about two lines and a half long, which is firmly articulated to one part of the root of the tusk or poison fang, the other part of the root of that tooth being strongly articulated with the middle

middle of the upper jaw: This contrivance is intended for assisting to support the tooth, and for erecting it when it is required for biting. The upper jaw is composed of two bones, which are separated by the cartilaginous bone of the muzzle already described, and are each articulated with that bone. These two pieces are each about ten lines in length, and are situated more inwards than those which compose the lower jaw, which extends beyond them on each side when the mouth is shut. On the sides of these bones the tusks or poison fangs are placed, being out of the line of the other teeth, and pointing outwards. Common Viper.

"The under jaw is likewise composed of two pieces, which are connected at their anterior extremities by a muscle, which is able to separate them or bring them together as is required; and they are articulated behind as already described, to the clavicular bones, and the portions of the upper jaw. These portions of the lower jaw are farther subdivided each into two bones, which are articulated together about the

Common Viper.

the middle of the jaw, the anterior piece having a groove or hollow into which the posterior piece is received: This middle joint is so constructed as to admit of lateral motion, the end of the posterior bone being covered above and below by processes of the anterior piece, but not at the sides. The under teeth are placed only on the anterior of these portions.

"The principal nerves of the head of the viper are, the olfactory, already mentioned, the optic, and the auditory; besides which there is a pair of nerves distributed to the mouth, and what may be called the sixth pair, or par vagum, which last is distributed to all the vital and natural organs. There are several other nerves which go from the lower part of the brain through small holes in the skull, but which are so small as to render it difficult, if not impossible, to trace their distribution. Another considerable nerve originates in the brain, which comes out of the skull behind the auditory nerve, having a small apophysis

Common Viper.

lis of bone between them; this nerve extends along the clavicular bone, circling round the lower jaw, is inserted into the middle of that on each side, being then contained within it to the extremity of the jaw, and is distributed to all the under teeth.

"The head is likewise supplied with veins and arteries, which arise from the heart and liver, and are distributed in an infinite number of ramifications over all its parts. It has likewise several muscles situated at the sides and below the cranium, and contiguous to the clavicular bones and to both jaws: These serve to fill up the hollows and to cover the bones, but principally for giving motion to the several parts, in which latter office they are assisted by the nerves.

"Besides the bones of the head, all the other numerous bones belonging to the skeleton of the viper consist of vertebrae and ribs. The vertebrae, or chain of bones forming the chine or back bone, begin directly

Common Viper.

rectly behind the ſkull, to which, the firſt vertebra is articulated, all the reſt being articulated to one another in ſucceſſion to the extremity of the tail. In every viper, whether male or female, there are a hundred and forty five vertebrae, from the head to the commencement of the tail; and as each of theſe has two ribs attached, one to each ſide, there are two hundred and ninety ribs, which cover the vital and natural organs of the animal: Each of theſe is bent round, ſo that its other extremity unites with one of the large plates under the belly; ſo that the number of theſe plates exactly correſponds with that of the vertebrae between the head and beginning of the tail. The tail contains twenty five vertebrae in its whole length, and is entirely deſtitute of ribs, inſtead of which each vertebra has an apophyſis or little projecting proceſs at each ſide.

"Each of the vertebrae has an apophyſis or ſpinous proceſs on its upper part, near a line in height, all of which form a longitudinal ridge on the back of the animal;

mal; and each has another pointed proceſs on its lower ſurface, about the ſame length with the former, all of which are curved or bent towards the tail of the animal; each has likewiſe a tranſverſe proceſs at each ſide, to which the ribs are articulated. All the vertebrae are hollow within, forming a ſheath for the paſſage of the ſpinal marrow; from which a pair of nerves, one on each ſide, are tranſmitted between every two vertebrae, from behind the head to the extremity of the tail.

"Four large ſtrong and long muſcles originate from the back of the head, and reach to the extremity of the tail; one pair of theſe is attached on each ſide to the ſpinous proceſſes, and the other pair, on each ſide of the former and a little below, is attached to each vertebra. Another pair of muſcles is attached to the inferior ſurfaces of all the vertebrae. There are likewiſe intercoſtal muſcles between every two ribs, ſerving the ſame purpoſes of ſeparating the ribs as in all other animals; and all theſe muſcles,

Common Viper.

muſcles, both large and ſmall, are furniſhed with arteries, veins, and nerves.

" The wind pipe, or trachea, is placed below the tongue, and extends along that member which covers it on its fore part: It begins in the fore part of the mouth, by an oval orifice, ſomewhat prominent, and having a ſmall raiſed point at its inferior edge. The beginning of the wind pipe is compoſed of ſeveral cartilaginous rings, which are joined to each other, and which continue about an inch; when getting into the right ſide of the animal, it joins the lungs; after which it is only compoſed of half rings united by membranes that are attached to the lungs; this ſtructure continues to about the fourth part of the length of the liver, which with the heart are attached to it. The whole trachea is about eight or nine inches long; and, after the end of the rings, it becomes entirely membranous, reaching to the beginning of the inteſtines, where it ends in a round ſack. The lungs, or rather the lung, there being but one lobe, are united to the trachea, and

are

Common Viper.

are ſituated on the right ſide of the animal: It is compoſed of a cellular net-work, of a bright red colour, exceedingly thin, tranſparent, and ſomewhat wrinkled on its ſurface; being ſeven or eight inches long, and not quite one inch wide. It is all over ramified with arteries and veins.

" The heart and liver are both ſituated on the right ſide; and before, or above the heart, at the diſtance of about the quarter of an inch, there is a ſmall fleſhy and ſomewhat flattened body, about the ſize of a ſmall pea, and filled with a watery fluid: This body is placed below the lung, and is attached by membranes to that organ, the heart and the liver; it may be conſidered as analogous to the thymus gland of other animals, and is probably intended to ſerve the ſame purpoſes.

" The heart is placed about four or five inches below the beginning of the lung; being about the ſize of a ſmall horſe bean, of a longiſh ſhape, and covered by its pericardium or heart-purſe which is tolerably

Common Viper.

thick. It has two ventricles *, one to the right, and the other to the left ſide, and two holes or openings. The blood which returns by the vena cava enters by the right ventricle, from which it paſſes to the left, and goes out from that by the aorta or great artery; which divides immediately into two principal branches, one of which goes to the upper parts of the body, and the other, paſſing below the eſophagus or gullet, takes a diagonal courſe downwards, and, dividing as it proceeds into many branches, ſupplies the whole inferior parts with blood.

"The liver is a reddiſh brown fleſhy body, and is placed about half an inch below the heart, being ſupported in its place by the ſame membranes which ſuſtain the heart: The length and breadth of the liver are very different in different individuals, but the largeſt are from five to ſix inches long by half an inch in breadth. The liver is compoſed of two large lobes, that on

* By two ventricles, muſt undoubtedly be meant two cavities, one the auricle, and the other the ventricle.—T.

on the right side reaching a full inch lower than the other: These two lobes are separated by the vena cava, which runs between them, and even serves to unite their lower parts together. At the upper part the substance of the two lobes is continuous, and can not be separated without cutting. The upper part of the trunk of the vena cava divides into two branches, the larger of which goes directly to the heart, and the other passing under the lungs goes to the upper parts of the body: The lower part of the vena cava sends off several branches, which go to all the lower parts of the body. Common Viper.

"The viper has no diaphragm, or midriff, for separating the vital from the natural or chylopoetic organs. The thin membrane formerly mentioned, which is attached to the wind pipe and lungs, and reaches down towards the bowels, ending in a shut sack, may perhaps be considered as serving in some measure the purpose of a diaphragm.

"The gall-bladder is situated about an inch below the liver, close to the left side of

Common Viper.

the bottom of the ſtomach; being about the ſize and ſhape of a ſmall bean laying flat. The gall is about the conſiſtency of thin ſyrup, of a deep green colour, and extremely bitter and acrid in taſte. The gall-bladder has only one ſmall duct, which begins from its upper and inner part: This duct immediately makes a turn downwards along the inner ſide of the gall-bladder to which it adheres; it then divides into two branches, the larger and more direct of which, paſſing by the ſubſtance which the ancients conſidered as the ſpleen, opens into the inteſtine; the ſmaller branch turns ſhort round at the diviſion, and ſeems to run upon the liver, but divides into ſeveral branches which are ſo minute as not to be followed in their courſe. I ſhall not attempt here to refute the opinion of the ancients, reſpecting the poiſonous property which they attributed to the gall, as I ſhall take another opportunity to demonſtrate, that it is not only deſtitute of venom, but is even poſſeſſed of a balſamic and medicinal virtue. The pancreas, conſidered as the

ſpleen

ſpleen by all the ancient writers, is placed at the right ſide of the animal, very near, and a very little beneath the gall-bladder; it is about the ſize of a large pea, being of a glandular ſubſtance: Its glandular ſtructure, and its ſituation cloſe to the bottom of the ſtomach, induce me to conſider this body as the pancreas, rather than the ſpleen; but I ſhall leave the deciſion of this point to the ingenuity of future comparative anatomiſts. Common Viper.

"The eſophagus or gullet begins at the bottom of the fauces or back of the mouth, being placed rather on the left ſide of the neck; it goes directly downwards by the ſide of the lungs and liver, to join the oriſice of the ſtomach. The gullet is formed of a ſingle membrane, which is very ſoft, and ſo diſtenſile that it may be blown up to two inches diameter, and is a foot in length: Into this large bag all the animals which the viper hath killed and ſwallowed whole are firſt received, for which purpoſe it is better fitted than the ſtomach, being both larger and more diſtenſile.

Common Viper.

"The ſtomach, which ſeems only a continuation of the gullet, is however conſiderably thicker, and is compoſed of two ſtrong coats, owing to the thickneſs and ſtrength of which, it can only be diſtended to about an inch in diameter; its length is from three to four inches. The upper orifice, and to the middle, is about an inch diameter, as juſt mentioned; from thence to the under orifice it grows gradually narrower, ending in a ſtraightened ſphincter. The inner coat of the ſtomach is full of wrinkles when empty. It is placed, like the gullet, on the left ſide of the body; but the lower orifice turns towards the middle of the body where it meets the duodenum, or beginning of the inteſtinal canal. The length and ſize of the eſophagus and of the upper half of the ſtomach, are indiſpenſibly neceſſary to the viper, which ſwallows every thing whole; ſo that when it finds any animal or article of food too large for being contained in the ſtomach, a part can remain in the gullet, until what is within the ſtomach is digeſted and removed. This proceſs, however,

is

Common Viper.

is extremely slow, because, as the stomach does not close at its upper orifice, it is incapable of supporting any considerable heat for the purposes of quick digestion.

" The intestinal canal is situated in the middle of the body, along the under surface of the back bone, and beginning immediately below the stomach. It may be divided into three portions: The first of these, which may be named the duodenum, is very small in diameter; the second, which may be called the colon, is a good deal larger, and has a considerable number of folds; the third, or rectum, is very large and perfectly straight, having its opening, anus, or vent, just before the beginning of the under side of the tail. At the side of the intestines are placed the testicles, with their vessels in the males, in the females the ovaria and their appendages, and the two horns or processes of the matrix or womb.

" The kidneys are situated below the testicles of the males, and the ovaria of the females; they are each formed of several contiguous round glandular bodies, some-

Common Viper.

what flattened, ranged in a line, usually two inches and a half in length, and two lines and a half in diameter; they are of a pale red colour, the right kidney being always placed somewhat higher than the other; and from each kidney an ureter or excretory duct conveys the urine to very near the extremity of the rectum.

"The whole intestinal canal, together with the testicles and kidneys, are enveloped in very white soft fat, which remains fluid like oil when once melted; and in some individuals a little fat is found near the heart, the lungs, and liver, particularly round the gall-bladder, and near that substance which has been already described as the pancreas, and which some consider as the spleen. Besides, all these bowels are enveloped by a strong membrane, which is firmly adherent to the extremities of the ribs; this membrane, together with the fat, might be considered as an omentum, but as the viper is an imperfect animal, I shall not pretend to name this membrane, leaving

ing thoſe who are better informed to give it ſuch a name as they think beſt." Common Viper.

Such is the anatomical account given by M. Charas; the following obſervations we have made ourſelves. The number of teeth varies in different individuals, but is frequently twenty eight in the upper, and twenty four in the lower jaw: Beſides theſe, every viper has one or two, ſometimes three or even four, very white tranſparent hooked and ſharp teeth, about a quarter of an inch in length, on each ſide of the upper jaw; theſe are uſually called the tuſks or canine teeth, from their general reſemblance to the tuſks of moſt quadrupeds, but we ſhall call them *fangs*, as a more appropriate term for diſtinguiſhing teeth of ſuch peculiar uſe and ſtructure. Theſe teeth are very moveable, and may be erected or lowered at the will of the animal: For the moſt part they are laid flat along the jaw, pointing backwards, and in this ſituation their ſharp hooked points are concealed; but when the animal is inclined to bite, they are then erected, and being employed

Common Viper.

employed as deadly weapons, inſtill venom into the wounds which they inflict.

Near the roots of theſe fangs, though not in the ſame ſockets, there are always ſeveral ſmall teeth of unequal ſizes and of ſimilar ſhape and ſtructure with the fangs: Theſe are as it were concealed in hollows of the jaw, and ſeem intended for ſupplying the place of the fangs, when any of them happened to be loſt or torn out by accident. "When examined with a microſcope, theſe teeth are obſerved to be rooted in a very fine ſoft membranous plexus: They become gradually ſmaller in proportion as they are ſituated at a greater diſtance from the large fangs, thoſe which are neareſt to the ſerviceable fangs being both harder and more diſtinctly formed; the others, which are more diſtant, are ſmaller, ſofter, leſs diſtinctly formed, and of a mucilaginous conſiſtence, particularly at their roots, and have the appearance of being formed from a whitiſh gelatinous matter *." Of theſe ſecondary

* Fontana on Poiſons, Florence edit. 1781. vol. i. p. 6.

Common Viper.

ſecondary fangs there are uſually found from two to eight; but it is reaſonable to ſuppoſe, that their number has certain limits, and that the fangs may be ſo often loſt or deſtroyed as to be no longer replaced by means of others growing up to ſupply their loſs: In ſuch a caſe the viper would remain all the reſt of its life deſtitute of fangs, and a perſon or animal bitten by ſuch a viper would moſt certainly eſcape the danger of having venom inſtilled into the wound. As vipers are aſſuredly liable to the entire loſs of their poiſon fangs, this gives an additional reaſon for endeavouring to aſcertain ſome other external character for diſtinguiſhing the oviparous and viparous ſerpents, beſides that of the want or poſſeſſion of fangs.

The fangs of the viper are hollow, having each two tubes or cavities: One of theſe, which is common to all teeth, is on the concave ſide of the tooth, having only one opening at the root, and is for containing the veſſels and nerves of the tooth; the other, which is peculiar to the poiſon fangs of

Common Viper.

of ſerpents, is ſituated on the convex ſide of the tooth, having two openings, one at the baſe for receiving the poiſon from the gland in which it is elaborated, and the other near the points of the tooth for injecting the venom into a wound. The fangs are contained for two thirds of their length in a kind of ſheath, or fibrous membrane, which is open towards the points of the fangs, terminating in a kind of rim or border, which is often ſomewhat fringed.

The venom of the viper is contained in a little bladder on each ſide of the head, ſituated under the muſcle of the upper jaw; by the motion of this muſcle the bladder becomes compreſſed, ſo as to preſs out ſome of the poiſon through a duct to the baſe of the fang, where, paſſing through the canal in the tooth itſelf, it is injected into a wound. This is the only deleterious liquor produced in ſerpents; for repeated experiments have demonſtrated * that the frothy fluid which ſmears their jaws when enraged

* See Fontana on Poiſons.

enraged has no such property, though it was anciently supposed of a poisonous quality. Common Viper.

The venom, or poisonous fluid of the little bladders, is of a yellow colour; it is neither of an acid nor alkaline quality, as has been conceived, and even asserted without the smallest foundation, at different times, neither has it the smallest caustic or corrosive power, and it would seem that it does not contain any salt, properly speaking, as in drying it does not crystallise, but only cracks and divides into numerous small parts, so as to resemble a net or spiders web *.

Though the venom of the viper is extremely subtle and powerful, it would appear that it produces no deleterious effect on animals that are destitute of warm blood, and that it is incapable of producing death in animals of the same species: In animals having warm blood, the danger attending the bite of a viper is the less in proportion to their

* Fontana, as before cited.

Common Viper.

their ſize, ſo that is by no means always mortal to man and the larger animals. Experiments ſhow that its danger increaſes in proportion to the quantity infuſed into wounds by repeated bites. Its poiſonous quality is in all probability increaſed in proportion to the heat of the climate or ſeaſon of the year, and to the ſtate of the viper at the time, as more or leſs irritated, more or leſs lively, more or leſs preſſed by hunger, and many other circumſtances. Hence there may be ſome foundation for the aſſertion of Pliny, that vipers and other venomous ſerpents have no poiſon during their torpid ſtate *. In the opinion of the Abbe Fontana, the venom of vipers induces death by deſtroying the irritability of the nerves, in the ſame manner as is produced by ſeveral other poiſons, both of the animal and vegetable kingdoms †: The ſame celebrated Naturaliſt has ſhown, that the venomous liquid is a very dangerous poiſon when taken internally; and attributes

* Plinii, Hiſt. Natur. lib. viii.

† Fontana on Poiſons.

tributes the contrary opinion given by Redi and other authors, to its having been adminiſtered in ſuch ſmall doſes as not to produce injury. Common Viper.

Many attempts have been made in all ages for diſcovering means to guard againſt the danger attending the bite of the viper. The Abbe Fontana has taken infinite pains on this important ſubject, no other perſon having had either the patience or the courage to carry on ſuch a number of experiments, having made above ſix thouſand on this ſubject. Volatile alkali, the various acids, vegetable and mineral alkalies, both mild and cauſtic, ſea ſalt and other neutral ſalts; all of theſe either taken inwardly or applied externally are entirely uſeleſs. According to his experiments, oils, particularly the oil of turpentine, have ſome effect in preventing the fatal effects of this venom; and he conſiders it as the moſt effectual mode of applying this remedy, to bathe the part for a long time with oil of turpentine applied as hot as poſſible. He conſiders it likewiſe uſeful to keep the part affected

Common Viper.

affected in water, either pure, or having sea salt or some other saline substance dissolved in it, or impregnated with quicklime: This lessens the pain and inflammation, and occasions the part to become less livid or discoloured. The effects of vomits seemed somewhat beneficial in preventing or lessening the danger. But what seemed the most certainly effectual, was to cut out the wounded part a few seconds or minutes after the accident, always the sooner the better, and the larger the animal wounded the more time could be allowed before cutting out the piece. He finds that the nerves are not the conductors of the poison, which is only communicated by means of the blood; and he considers superficial wounds as not dangerous. He believes that, to prevent danger, it is sufficient to stop the circulation in the part bitten; having found, by a vast number of experiments, that this prevented the internal or general disease of the system by which death is produced in consequence of a bite, and confining the venom to the part bitten

bitten, occaſioned it to act upon the ſmall quantity of circulating fluid ſtopt there by the ligature, by which means it becomes decompoſed or altered in its nature, and in a ſhort time is no longer capable of producing any internal diſeaſe. The local diſorder, indeed, produced thus, by confining the venom to the part bitten, was very ſevere, and ſometimes tended to gangrene: And, as it was more violent in proportion to the ſtrictneſs of the ligature and the continuance of its application, it becomes important to know with ſome preciſion, the degree of tenſion and the time neceſſary for the ligature to produce its ſalutary effect. After remarking that, by bad treatment, the ſlighteſt bite of a viper may be changed into a conſiderable ſore, which is even apt to become gangrenous, the Abbe aſſures us that the venom of the viper is by no means ſo dangerous as has been ſuppoſed. When, therefore, any one has been bitten by a viper, even although no remedies may have been uſed, there is no cauſe for deſpair; and Common Viper.

Common Viper.

it ought to be ſtrongly inculcated, that the very fear which is produced on this occaſion is frequently a principal cauſe of its fatal conſequences. "The bite of a viper, ſays the Abbe Fontana, is by no means neceſſarily mortal in its conſequences: Even if bitten by two or three at once, the ſubſequent diſorder would indeed be ſo much the more ſevere, but it would not in all probability prove mortal. Though a viper may have bitten a man in many different places, and may have exhauſted the whole of its venom in the wounds, ſtill there is no room for deſpair *."

On purpoſe to give a clear view of the inferences which that able philoſopher believes himſelf entitled to draw, from his numerous and beautiful experiments, we ſhall ſubjoin an extract from his work; by which likewiſe may be ſeen, that the Abbe, as well as ourſelves, acknowledges the influence of the ſeaſons, and of other local or accidental cauſes, on the ſtrength of the venom

* Eſſay on Poiſons, Vol. II. p. 45.

venom of vipers; and that he believes that the results of his experiments may have been influenced by several particular circumstances. Common Viper.

"The last result of so many experiments, on the utility of ligatures in cases of bites from vipers, is not attended with that certainty, nor does it seem to authorize those general views, which similar experiments promised at the outset. We are, however, by no means to reject this remedy as useless, having already seen its perfect efficacy in pigeons and guinea-pigs: It certainly may be equally useful for other animals; and perhaps for all, if we were better acquainted with the way of applying it. In general it appears, from our experiments, that no good is to be expected from scarifications of any kind; as we have seen animals die after this had been practised, which would have been easily cured by means of ligature.

"I cannot pretend to determine the degree of usefulness which is to be expected

Common Viper.

from the application of ligatures on mankind, when bitten by vipers, becauſe on this ſubject I have no direct experiments. But, as I have already expreſſed my conviction that the bite of a viper is by no means naturally fatal for man, I am of opinion, that in this caſe a ligature muſt leſſen the conſequent diſorder. Perhaps a very ſlight degree of tenſion in the ligature might ſuffice, and perhaps it need not be kept long applied: But experience is abſolutely neceſſary, to enable us to pronounce with preciſion; and the experience of bites of the viper in mankind are very rare.

"It may be proper to remark, that part of my experiments on the venom of the viper were made during winter. Hence it may very naturally be ſuppoſed, that the vipers I employed on theſe occaſions were not in full vigour; that they would, therefore, bite with leſs power; and that, having had no food for ſeveral months, their venom muſt neceſſarily be ſcanty, perhaps leſs virulent. I have no heſitation in ſuppoſing,

Common Viper.

posing, that, during summer, or in a hotter climate, the effects, from my experiments, must have been in some measure different, and in general greater.

"Besides, I may have been sometimes imposed on by those people who furnished me with vipers for my experiments. At the first, after having caused the vipers I had bought to bite those animals which were the subjects of my experiments, I used to return them to the people from whom they were purchased; and I have full reason to believe that these vipers were often sold to me a second time after their venom was exhausted. But as soon as I began to suspect this circumstance, I killed every viper that had been used in my experiments *."

In a supplement to his second volume, the Abbe Fontana informs us that, by means of subsequent experiments, he has ascertained that caustic †, when mixed with the

* Fontana on Poisons, Vol. II. p. 59.

† It would have been proper to have specified the particular kind of caustic, *Pierre à cautère*, used in these experi-

Common Viper.

venom of vipers, deſtroys its power completely. He is therefore convinced that this is the only certain ſpecific, and ought to be applied as ſoon as poſſible after the bite; ſome ſlight inciſions being firſt made, to enable the cauſtic to penetrate to the ſeat of the venom *.

Sometimes, however, this remedy may not be applied in time, or it may not mix with the venom. It may not always be poſſible to make the cauſtic penetrate into every part where the venom has already gone. The holes which have been made by the fangs of the viper are very ſmall, nay often inviſible, and extend in various directions and to uncertain depths. The inflammation and tumefaction which ſupervene, ſtill farther augment the difficulty of diſcovering the exact ſituations of the wounds. Hence the inciſions, recommend-

ed

experiments: Though, perhaps, either the lapis infernalis, or lunar cauſtic, may anſwer equally well; perhaps the former of theſe was employed. T.

* Fontana on Poiſons, Vol. II. p. 313.

ed before applying the cauſtic, muſt in ſome meaſure be made at random. Common Viper.

Beſides, the venom may chance to be ſuddenly and in conſiderable quantity introduced into the ſyſtem of the wounded animal, ſhould the poiſon fang happen to penetrate any of its veſſels, more eſpecially one of the larger veins. In this way, as the venom would be carried very quickly, and in conſiderable quantity, directly to the heart, the bite would be almoſt inſtantaneouſly followed by death; and this caſe is abſolutely without remedy. Hence, as the Abbe admits, cauſtic can not be pronounced an infallible remedy in every poſſible caſe of the bite of vipers: Yet, there can be no doubt of its uſefulneſs, and it may even be conſidered as the real and only ſpecific remedy.

Such are the reſults deducible from the experiments which have been made by Abbe Fontana, on the nature and effects of the venom of vipers; the moſt numerous and beſt conducted ſet of experiments that

Common Viper.

has hitherto been made on this intereſting ſubject. We ſhall now proceed with our deſcription of the animal.

The eyes of the viper, which are provided with eye-lids ſimilar to thoſe of the oviparous quadrupeds, are extremely bright and lively; and, as if conſcious of the formidable venom which it is capable of employing, the looks of the viper appear extremely bold, and, eſpecially when irritated, its eyes gliſten as if on fire.

When angry, the viper opens its formidable mouth, armed with poiſon fangs, and projects its grey tongue, compoſed of two fleſhy cylinders united for two-thirds of their length, and divided at the extremity. The tongue is agitated with ſuch velocity, that it ſeems even to ſparkle; and the light is reflected from it in ſuch a manner as to make it appear phoſphoric. Anciently the tongue of the viper was conſidered as a ſpecies of dart, with which it was able to wound its prey; it was believed that the venom was ſituated at its double tip, which

was

was thus compared to a poiſoned arrow. This error has probably originated from its being remarked, that the viper always darts out its tongue rapidly when about to bite. The tongue is contained in a kind of ſheath, in which there is no venom whatever, and the principal uſe of the tongue is to catch inſects, which form part of the food of vipers *." Common Viper.

The jaws of the viper are articulated in ſuch a manner as to admit of being opened very wide, as has been already remarked in our preliminary diſcourſe: Beſides which, the two ſides of each jaw are united together ſo as to allow of each ſide being moved ſeparately from and independent of the other; by which means the animal is greatly aſſiſted in its power of ſwallowing its prey. Having fixed the teeth of both jaws on one ſide into the prey which it has ſeized; it advances the other ſide of both jaws, and,

* See an account of the ſtructure of the tongue of ſerpents, in our preliminary diſcourſe, prefixed to this volume.

Common Viper.

and, fixing the teeth of this side, draws it back towards the throat; while again the opposite side of both jaws is pushed forwards to do the same; and by this alternation the viper is enabled to force over its throat animals of considerable size, sometimes even larger in diameter than its own body unstretched. In these cases, indeed, this vast mass of food remains for a considerable time in the œsophagus or stomach, or partly in both, before it is digested. At last, however, the digestible parts are gradually dissolved by the digestive gastric juices into a semifluid paste; while those parts, over which the digestive faculty has no power, are rejected again by the animal. "We observed, says M. Charas, in a large part of the body of a lizard, which a viper vomited up twelve days after being taken, that, of the head and forelegs and the forepart of the body, which had been fully within the stomach of the viper, nothing remained besides the bones; whereas the rest of the body, with the hind legs and tail, remained

remained as fresh as if it had only been swallowed that day *." Common Viper.

Like a great number of other serpents, and several oviparous quadrupeds, the viper feeds on small insects, which it catches by means of its double tongue: It likewise devours larger insects, such as beetles and cantharides, and even those which are often very noxious, such as scorpions †. Besides all these, it preys on small lizards, young frogs, and sometimes small mice, young moles, and even tolerably large toads, without any seeming disgust at their bad flavour, or appearing to be injured by their supposed venomous juices.

The viper can exist a very long time without eating; and some writers have asserted that it can live a year or even longer without any nourishment. This very long fast is perhaps exaggerated; but it is certain that it may live for several months without food. Mr Pennant kept several in a box

* Memoirs, pour servir à l' Hist. Nat. des Anim. iii. 603.

† Aristoteli Hist. Anim. Lib. viii. ch. 29.

Common Viper.

box for more than ſix months without food, and yet they did not ſeem to have loſt any of their uſual vivacioufneſs. It would even appear, that this very long faſt does not only neither ſuſpend nor injure their vital functions, but that it does not even produce any violent degree of hunger; for M. Charas, in his anatomical deſcription of the viper already cited, mentions having ſhut up ſome vipers for ſeveral days along with mice and lizards, and, though they killed theſe animals, they did not uſe them as food.

The common viper does not avoid other individuals of the ſame ſpecies, but rather ſeems at certain ſeaſons of the year to ſeek each other. During winter ſeveral vipers are often found rolled up together, under heaps of ſtones or in hollows of old walls. They can entertain no fear of each other, as we have already ſeen that their venom has no effect on each other or on themſelves; and it is probable that they thus congregate on purpoſe to augment their natural heat, in

oppoſition

oppoſition to the effect of the ſeaſon, and thereby to put off as long as poſſible the ſeaſon of torpidity and of abſolute privation. Common Viper.

When the ſkin of the viper becomes in the ſmalleſt degree injured, it immediately ceaſes to be ſupplied with nouriſhment, and a new ſkin begins to form below the old one. On this account it is, that almoſt all vipers, when taken, are found to have two ſkins; the old ſkin, which is leſs or more injured or decayed; and the new ſkin, which is leſs or more advanced in its growth. They throw off their old ſkin in the fine weather of ſpring, and the new ſkin, when firſt diſcovered, is far more lively in its colours than the old. It frequently happens that this new ſkin becomes injured by ſome means or other during the ſummer; in which caſe it dries and becomes ſhrivelled, and falls off about the end of autumn, being replaced by another new ſkin which has grown during ſummer: Thus, ſometimes, the viper changes its ſkin twice in one year.

The

Common Viper.

The common viper takes ſix or ſeven years to acquire its full ſize; but is capable of propagation at two or three years of age. The male and female uſually unite in the month of May. The female carries her young for three or four months; after which, if the ſummer heats ſtill continue, ſhe again ſeeks out the male, and produces a ſecond litter in the ſame year.

Some of the ancients, too fond of the marvellous, have alleged that, in the ſexual union, the male inſerted his head into the throat of the female, by which ſhe became impregnated; while the female, as a recompenſe, bit off his head: As a ſequel of the fable, they relate that the young vipers, after being hatched in the belly of their mother, eat their way through, and thus revenged the death of their father *. There is

* "Vipera mas caput inſerit in os, quod illa abrodit voluptatis dulcedine—Eadem tertia die intra uterum catulos excludit: deinde ſingulos ſingulis diebus parit, viginti fere numero. Itaque caeteri tarditatis impatientes perrumpunt latera occiſa parente.——Plin. Hiſt. Nat. lib. xx."

Common Viper.

is not, however, any neceſſity to take up time in refuting theſe abſurd ideas. The common viper copulates and comes into the world like all other viperous ſerpents; but the ancients, and even ſome moderns, have too often taken particular facts, or ſingular accidents, or even exaggerated ſtories, as general laws on which to build opinions and ſyſtems. It would appear that, in this particular caſe, they were diſpoſed to believe that one generation of animals ſo much dreaded could not procure exiſtence without deſtroying the preceding generation.

In the anatomical deſcription of the viper, by M. Charas, already quoted, we have the following account of the male and female parts. "In the male, the two teſticles are long, rounded, a little flattened lengthwiſe, and ſomewhat pointed at each extremity. They are white, and of a glandular texture. The right teſticle is rather more than an inch long, while that on the left ſide is ſhorter and ſomewhat ſmaller. Their diameter is about the ſize of the wing quill of a large fowl:

Common Viper.

fowl: The two are differently placed; that on the right ſide beginning immediately below the gall bladder, while the left one begins about two-thirds of an inch lower. They are both ſuſpended from the bottom of the liver by two ſtrong membranes, which are attached to their upper extremities. The teſticles are uſually ſurrounded by a quantity of fat, in ſuch manner that it is difficult to diſcover them, being ſo much of a colour with the fat."

"From about the middle of the inner ſide of each of the teſtes, a long, ſlender, and ſomewhat ſolid, ſubſtance is obſerved, which is even whiter than they, and which is attached to their inner ſide all the way to their inferior extremities: This body may be named the epididymus; and from the lower end of each of theſe begins a ſmall, bright white, flattiſh, and varicoſe, veſſel, for the moſt part filled with a milky fluid. Theſe ſpermatic veſſels are very delicate, and are contorted in a very elegant form, like a collar of SS; and proceed downwards, between

between the gut and the kidneys; thence, along the ureters, to the hole in the loweſt gut near the anus. The ſpermatic veſſels become ſtraight, near their opening into the gut; and are accompanied, in their whole length, by arteries and veins. About the extremity of each of the ſpermatic veſſels, we find a ſmall glandular body, ſimilar in ſize and form to a ſeed of the holy thiſtle, which may be conſidered as proſtates, or ſeminal veſicles; and theſe are placed along and below the double penis. They are always filled with a milky fluid, ſimilar to that found in the ſpermatic veſſels. Some anatomiſts have conſidered theſe glandular bodies as a ſecond pair of teſtes; as if that were neceſſary in an animal that is furniſhed with a double penis: But their ſubſtance is quite different in appearance from that of the true teſtes, and they are evidently mere receptacles of the ſeminal fluid." Common Viper.

"The male viper has two diſtinct penes, exactly ſimilar in all reſpects, and attached to each other. Theſe are about the ſame

Common Viper.

length with the tail of the individual: They begin at the extremity of the tail, on its under ſide, and are ſituated exactly along it below the ſkin quite cloſe to each other. They become larger as they extend upwards; and end at the root of the tail, where each has an opening cloſe to the anus, which lies between them. Each of theſe is formed of two carvenous bodies, cloſely joined together, which unite, each pair, into one glans at the point; and each penis is provided with its proper prepuce and erector muſcles. Each penis is covered by a number of very hard and white pointed ſubſtances, having their points turned in various directions; and theſe are larger towards the glans. The penes are generally concealed within the body; and, except when about to copulate, can only be ſeen by forcibly preſſing them out. They are about the ſize of a date nut, and about two thirds its length; the glans being quite covered over with the prickly ſubſtance, like the ſkin of a hedge hog. The hole by which

which the penis come out is surrounded by a strong muscle, firmly attached to the skin, and which likewise acts as sphincter ani." Common Viper.

"The female viper has two ovaries, which are of the same form with the male testes, but longer and larger. They are placed each at the side and near the bottom of the two horns of the uterus; that on the right side being higher than the left, as is the case in the male testes, to which they are very similar in colour and appearance. The right ovary is about an inch and a half long, by two and a half lines in breadth; that on the left being somewhat smaller. Each is provided with an epedidymus and spermatic vessel, to convey their seminal fluid to the uterus, and which are much shorter than those of the male *. In female vipers that have been long kept in captivity, and are become very lean, and in such as have their eggs already considerably

 enlarged,

* This is probably an anatomical mistake; as, by analogy, we should refer these last described vessels to the Fallopian tubes of other animals.—T.

Common Viper.

enlarged, these ovaries are found greatly diminished in size, much shrivelled, and placed considerably lower, than in the above description.

'The vulva, or beginning of the uterus, is pretty thick and composed of two coats, and is placed above the rectum, into which it opens by a large orifice, of sufficient dilatability to receive both of the male penes at one time in copulation. It is about the size of a finger nail, and soon divides into two separate cells, to admit the two penes. The inside is very hard and full of wrinkles. To each of these cells is a separate uterus, which extend upwards, between the kidneys and intestines on each side, to near the bottom of the stomach, where they are suspended by ligaments from near the liver; and are likewise attached in their whole course by a number of ligaments fixed to the spine. These uteri are composed of two soft, thin, and transparent coats, and contain at first the eggs, and afterwards the young vipers; and are extremely dilatable, that

that they may accommodate themselves to the growth of a great number of young.' * Common Viper.

The eggs of the common viper are divided into two parcels, that on the right side being usually the most numerous; and each of these is inclosed by a membrane, which may be considered as the ovary †. The number of eggs varies in different individuals, from twelve or thirteen to twenty or twenty five; and, when at perfection, are about the size of a small birds egg. The young viper is rolled up, each within its own egg, and receives its nourishment from the fluid matter of the egg, by means of a navel string and sort of placenta. After it has pierced the egg and come into the world, this after burthen still remains, and is removed by the mother.

It has been said, that the mother viper does not abandon her young until they

 have

* Mem. pour serv. a l'Hist. Nat. des Anim. Vol. III. p. 630.

† More properly the uterus or egg-bed.—T.

Common Viper.

have acquired a conſiderable ſize, that they may be able to defend and take care of themſelves: And it has even been aſſerted that, when frightened, they ſought refuge within the mothers ſtomach; paſſing through her mouth and throat, and returning by the ſame road when the danger is over. There is no need ſeriouſly to refute this ridiculous fable. If ever young vipers have been obſerved to be ſwallowed by their mother, or at leaſt by a large viper, they have unqueſtionably been made a ſacrifice to hunger, and certainly were not thus placed in ſecurity from danger. Such an obſervation, if well authenticated, can only be adduced as a farther proof of voracious appetite in the viper; which preys often on ſmall lizards, young adders, and even ſometimes on its own newly produced young.

The common viper is found in moſt countries of the ancient world. In the Eaſt Indies it is to be met with, with only very ſlight variation from the individuals of Europe. It is even able to ſupport the viciſſitudes of very cold climates, being found

in

in Sweden, where its bite is nearly as dangerous as in the warmer regions of Europe. It is likewiſe found in Ruſſia, and in ſeveral parts of Siberia, where it is very numerous, as the ſuperſtitions of the people deter them from endeavouring to deſtroy this noxious reptile, as they conceive that ſome terrible diſaſter would follow the attempt *. Common Viper.

As venomous qualities are known to increaſe or diminiſh, in proportion to the heat of countries, it is evident that the poiſonous juices of the viper are capable of being very highly exalted in warm countries, ſince its bite is dangerous even in very northern latitudes. Probably the active properties, which are attributed to its juices in medicine, may be attributed to this cauſe; as few animals furniſh remedies ſo much boaſted of for their efficacy. In this way, the moderns make as much uſe of the viper as the ancients †. Every part of the

* Hiſt. Gen. des Voy. Vol. LXXI. p. 265.

† This abſurdity is haſtening into oblivion.—T.

Common Viper.

viper is employed in medicine, except thoſe parts of the head which are impregnated with its poiſon; more eſpecially the heart, the liver, and the fat. The fat of vipers has been held ſerviceable in diſorders of the ſkin; particularly for taking out wrinkles, and heightening the complexion: And this property will probably be the one moſt eſteemed by the moſt amiable part of our readers. As oppoſite effects are frequently produced by the ſame cauſes, operating in different circumſtances, we need not be ſurpriſed that the ſame active humours, which produce the ſubtile venom of the viper in the veſicles of its head, ſhould enable the other parts of its body to expel poiſon from the infected, who uſe it as food, as is aſſerted to have been frequently experienced.

We are not informed what degree of cold can be ſupported by the common viper, before it becomes torpid. But, in equal circumſtances, the viper muſt be reduced to a much greater degree of torpor than moſt other ſpecies of ſerpents: As theſe, during winter,

winter, conceal themselves in holes under ground, where they seek a milder temperature; while the viper, for the most part, only shelters itself below heaps of stones, or in the holes of walls, where the cold can more readily penetrate. Common Viper.

Vipers only crawl slowly at all times, and in general only attack such smaller animals as are their usual food. They never willingly attack man or the larger animals, except when wounded, trampled on, or irritated, when they become furious, and are apt to bite severely. From the firmer manner in which their spine is articulated, they are unable to turn and twist themselves so much as most other serpents; being only able to turn the head with any considerable agility. Owing to this circumstance, they are easily taken. For this purpose, some persons make use of a forked stick, by which they fix the viper by the neck; and then, seizing it by the tail, throw it into a bag. Others, holding down its head with the end of a stick, take it fast in the left hand by

the

Common Viper.

the neck; and, while the animal makes ineffectual efforts to defend itſelf, with its mouth wide open, cut out its poiſon fangs with a pair of ſciſſars or a pen-knife: The viper, after this, is incapable of doing injury, and may be handled with perfect ſafety*. Some viper catchers have the boldneſs to ſeize them ſuddenly by the neck, or even by the tail, with their hands; and, holding them with a firm graſp, the animal is altogether incapable of turning itſelf ſufficiently to bite the hand that holds it faſt.

The ordinary duration of a vipers life is not known: But, as it does not acquire its full ſize until after ſix or ſeven years of age, it may be ſuppoſed that their natural life is tolerably long; eſpecially as they ſeem very tenacious of life, and are able to ſuffer wounds and blows conſiderably better, in all probability, than moſt other ſerpents.

* The Engliſh viper catchers, having ſeized a viper by the neck, very often draw out its fangs, by giving it a bit of red cloth to bite, which they ſnatch haſtily away.—T.

pents. Several parts of their bodies, both internal and external, continue to move, and even in some measure to carry on their natural functions, after being separated from the animal. The heart continues to palpitate a long while after being removed from the body; and the jaws continue to open and shut, for a considerable time after the head has been cut off. It is even said, that it still retains sufficient power to bite the hand of any one who carelessly examines the separated head, and to squeeze out the venom through the fangs. It is a common custom to cut off the heads of vipers intended to be used in medicine, and throw them into the fire; and it has been alleged, that some have been bitten by such heads, found among the ashes, several hours after they had been so cut off, and have been thereby very seriously injured. It is even said, that some have lost their lives by imprudently handling the heads of vipers, both the common and other kinds, which had been dried or preserved in spirits of wine for several years.

Common Viper.

The

Common Viper.

The Abbe Fontana* ſays, "That the venom of the viper will keep for years in the hollow of the fangs, without loſing its colour or tranſparency; and that, if put into warm water, it diſſolves readily, and is ſtill ſufficiently active to kill animals: And that he has experienced, as Rhedi writes, that even dried and powdered, it will retain its deleterious powers for ſome months, if inſerted into a wound, by which it can communicate with the blood. For this purpoſe, however, it muſt not be kept too long; as he has found it quite innoxious at the end of two months."

The author of the anatomical deſcription of the viper, already cited, informs us, "That the ſpirits, or living principle of vipers, remain for ſeveral hours in the head and all parts of the trunk, after the animal has been ſkinned, the intrails taken out, and the body cut into many pieces, inſomuch that motion and contortions continue for a long while, the head remains able to bite,

* Vol. I. p. 52.

bite, and the bite is ſtill as dangerous as if the animal were ſtill entire and in life. He adds, that the heart continues to beat for ſeveral hours after it is ſeparated from the body." Common Viper.

It is extremely difficult to kill the common viper. Although it does not willingly take the water, it can live even for ſeveral hours under water without being drowned. It may even be kept for three or four hours, or longer, in ſpirits of wine, without being killed. And, in ſuch ſituations, its vital powers are not only not deſtroyed, but it ſtill retains moſt of its faculties; as vipers, plunged into ſpirits of wine, have been obſerved to attack and bite each other ſeveral hours afterwards: Yet tobacco, and eſpecially its eſſential oil, proves ſpeedily fatal to them. The oil of laurel-bay is likewiſe very quickly mortal, when applied to even a ſlight fleſh wound *.

"In Gmelins edition of the Syſtem of Nature, the number of plates in the adder or

* Abbe Fontana, Vol. II. p. 332.

Common Viper.

or common viper are said to vary considerably. In some an hundred and forty-six large plates, with thirty-nine pairs of small plates. In others an hundred and forty-eight large, and forty-two pairs of small. In others an hundred and seventy-seven large, and sixty-eight pairs of small plates. On the whole it would appear that these numbers are by no means to be depended on as specific marks of difference: Perhaps they increase in number with age. He adds the following varieties of the adder.

β. Adder, having roundish spots on the back, running together into a band; those on the tail transverse. Seba mus. ii. t. 9. f. 8. From India.

γ. Reddish brown, with a variegated head, and slender neck. Seba mus. ii. t. 36. f. 2. From St Eustatius.

δ. Having a white spot on the back of the head. Seba mus. i. t. 33. f. 5. From India.

ε. Having a large divided spot on the head.

head. Seba muſ. ii. t. 59. f. 1. From Celebes *.

Sp. II. *THE ÆSPING* †.

THIS ſpecies has conſiderable reſemblance to the adder, or common viper, laſt deſcribed; but ſeems chiefly to inhabit the more northern countries of Europe. It is very common in Sweden, and is there reckoned extremely venomous; and has been obſerved in Pruſſia by Wulf. The aeſping, or cherſea, has for the moſt part an hundred and fifty large and very long plates on the under ſide of the body, and thirty four pairs of ſmaller plates under the tail. The ſcales on the back have each a ſmall longitudinal ridge. The general colour Æſping.

* Added by the tranſlator.

† Coluber cherſea. Syſt. nat. ed. Gmel. i. 1091. G. 125. Act. Stock. 1749. p. 246. tab. 6. Wulf. Ichth. Laurent. Spec. med. 97.—Aſpis colore ferrugineo. Aldrov. ſerp. 197.—Æſping, in Swediſh—La Cherſea, in the original.

Aeſping. lour is ſteel grey*; the head being whitiſh, with a heart ſhaped dark ſpot on the crown. Along the back is a row of dark round ſpots, which touch each other in ſeveral places.

The aeſping is uſually found among bruſh wood and thickets, and is very much dreaded in the neighbourhood of Upſal. In one of his journeys through Sweden, Linnæus was called to a woman who had been bitten by an aeſping, and preſcribed olive oil in the uſual doze, as given ſucceſsfully for the bite of the black viper, but without effect, as the woman died.

In the Swediſh memoirs †, we have the following account of ſeveral other remedies which have been employed for the bite of this viper, by Dr Lars Montin. "The aeſping is extremely venomous, and the uſual

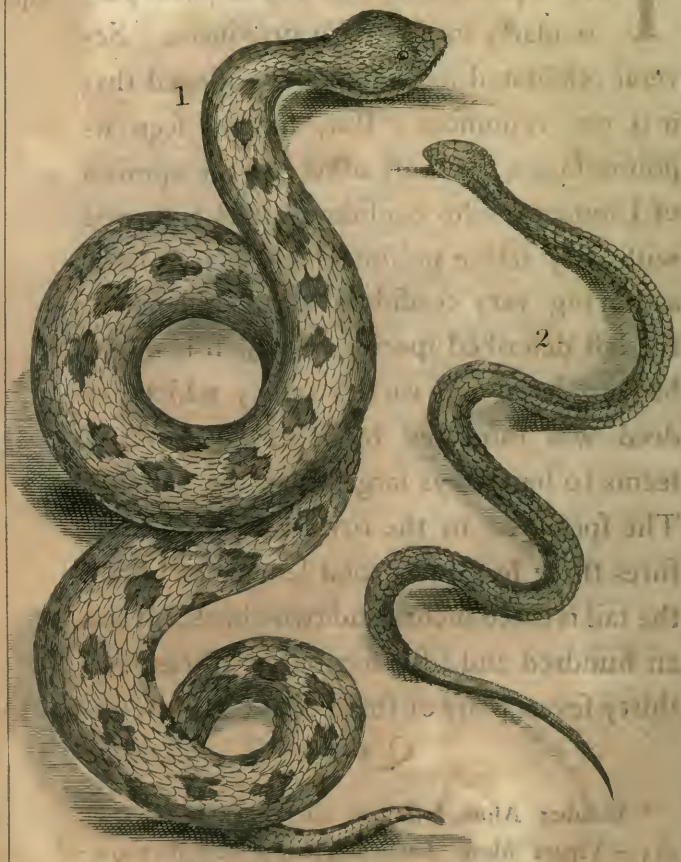
* Gmelin ſays duſky red, *ſpadiceus obſcurius*: Probably our author has tranſlated the *color ferrugineus* by ſteel or iron grey, when it ought to have been underſtood as the colour of ruſty iron.—T.

† See Collection Academique, partie étrangere, Vol. XI. p. 300.

uſual remedy, oil, is unequal to counteract its poiſon. The roots of mongos, magori, or ſeneka, would aſſuredly be efficacious; but theſe are very rare in Europe, and cheap and ready antidotes are what we chiefly want in country ſituations, where ſuch accidents frequently happen. Aeſping.

"A young peaſant having been bitten by an aeſping, in the little toe of the left foot, was in the following ſituation ſix hours after the accident, when I was called. The foot, leg, and thigh, were red and tumid; the pulſe ſmall and intermitting; he complained of head-ach, gripes, wearineſs, and general oppreſſion; cried often, and had no appetite. Theſe ſymptoms proved, that the poiſon had already mixed with the maſs of blood. It had been frequently experienced, that the juice of aſh leaves was an infallible remedy for the bite of the adder or common viper; but it was not known whether it would anſwer in the preſent caſe. No other remedy, however, being at hand, he was made to drink a glaſs full, every half

Aeſping. hour, of the expreſſed juice; and the wounded foot was covered by a poultice of bruiſed aſh leaves. At night he got a cup of warm oil. He ſlept well, and was much better next morning; the pulſe being ſtronger and more equal; the thigh was no longer ſwelled at all, and the leg and foot much fallen; and he now only felt ſmall remains of oppreſſion and weakneſs. He was adviſed to continue the aſh juice and oil, but neglected to do ſo; and, relapſing, was again relieved by the ſame medicines. In the relapſe, bluiſh ſtreaks appeared on the ſwelled limb, and the pulſe became quite weak and fluttering. A doze of theriac was given that night, which produced a copious perſpiration, and next morning all his ſymptoms were moſtly gone. The medicines were, however, continued; and in two days nothing remained, except a little ſtiffneſs in the foot, and a ſlight pain in the wound."



H. Lizars, Sculp.

1. Aspic, Sp. 3. - 2 Smooth Viper, Sp. 30.

Sp. III. *THE ASPIC**.

THE aſpic is found in France, and particularly its ſouthern provinces. Several celebrated naturaliſts have alleged that it is not venomous: But, having ſeen its poiſon fangs, we muſt adhere to the opinion of Linnaeus, who conſidered it as endowed with very active poiſon. It is placed here, as having very conſiderable reſemblance to the laſt deſcribed ſpecies, of which it might be conſidered as a variety only; which indeed was ſuſpected by Linnaeus; but it ſeems to be always larger than the aeſping. The ſpecimen in the royal collection meaſures three feet, in its total length, of which the tail is three inches and two-thirds. It has an hundred and fifty five large plates, and thirty ſeven pairs of ſmall ones; but the individual Aſpic.

* Coluber Aſpis. ſyſt. nat. ed. Gmel. 1. 1093. G. 125.—Vipera Moſis. Laur. amphib. p. 100. n. 219.—An Vipera maculata? Laur. ſpec. med. p. 102.—L'Aſpic. Encyclop. method.

Aſpic. dividual deſcribed by Linnaeus had an hundred and forty ſix only of the large, and forty ſix pairs of ſmall plates *.

The ſcales along the back, and on the upper part of the head, are oval, and have each a ſmall longitudinal ridge. There are three longitudinal rows of irregular brownish ſpots, edged with black, along the upper part of the body; from which this ſpecies has been named the tiger ſerpent, in ſome cabinets. Theſe ſpots unite on the tail into a zigzag ſtripe; which gives ſome reſemblance in the colour of this ſpecies to that of the adder, or common viper; with which it likewiſe agrees on the under ſurface of the body, being marbled with darkiſh and yellow.

It would appear that the aſpic of our country was unknown to the ancients: And it muſt not be confounded with the ſpecies which we ſhall afterwards deſcribe, under the name of Egyptian viper, to which the ancients

* Gmelin gives another having 146 large, and only 34 ſmall plates.—T.

ancients gave the name of aſpis, and which has been celebrated in conſequence of the death of the famous Cleopatra; and we ſhould not have employed the term for the preſent ſpecies, if it had not been ſo named by all our predeceſſors in natural hiſtory. Aſpic.

"Gmelin, in his edition of the Syſtem of Nature, has deſcribed this ſpecies very differently from the above. He ſays, That the upper ſurface of the body is reddiſh, with broad alternate and confluent ſtreaks, reſembling letters; the under ſurface being dotted with ruſty yellow. The noſe is terminated by an erect, wart-like, excreſcence. He adds, That its bite is cured by volatile alkaline ſpirit, particularly that preparation called *Eaue-de-luce*; and even by fetid ſpirit of tartar*."

* Added by the tranſlator.

Sp. IV. *THE BLACK VIPER**.

Black Viper.

THIS venomous ſpecies, which is conſiderably numerous in ſeveral European countries, has a good many circumſtances of reſemblance to the adder; but is eaſily diſtinguiſhable from it, even at firſt ſight, by its colour, which is moſtly black, or very dark, and it has a number of ſmall white dotes on the ſcales which cover the edges of the jaws. Sometimes, in this ſpecies, we may obſerve a ſet of ſtill darker ſpots, reſembling thoſe of the common viper in figure and diſpoſition; and from this circumſtance Pennant was diſpoſed to conſider it as only a variety of the common viper, or adder.

This

* Coluber Preſter. ſyſt. nat. ed. Gm. 1. 1091. G. 125. Faun. Suec. 287. Pall. Zool. Brit. Wulf.—C. Vipera Anglorum. Laur. amph. 98. n. 217. t. 4. f. 1. —Vipera anglica nigricans. Petri Muſ. 17. n. 104.—La Dipſade. Encyclop. method.

Black Viper.

This ſpecies is among thoſe ſerpents which muſt be ſeen by mankind with the greateſt abhorrence, as it unites the diſmal colours of mourning, with the horrible features of their conformation; wearing, as we may ſay, the very liveries of death, of which it is an active miniſter*.

In this ſpecies, the top of the head is not entirely covered with ſcales reſembling thoſe of the back, as in the common viper; but there are three ſcales a little larger than theſe, placed between the eyes, one advanced towards the noſe, and two immediately behind. In this circumſtance, the black viper approaches to the oviparous vipers.

The ſcales on its back are oval, and marked with a longitudinal ridge. One of the ſpecimens in the royal collection, meaſures a little more than two feet in its total length, and the tail is two inches and a third long. In this ſpecimen, there are forty ſeven large

* This poetic trait is preſerved, among a few others, rather to ſhew the taſte in language of the ſchool of Buffon, than as approving or imitating its model.—T.

Black Viper.

plates, and twenty eight pairs of ſmall ones. We have ſeen on an other individual, which was ſaid to have come from Louiſiana, an hundred and forty five large plates, and thirty two pairs of ſmall plates. The individual deſcribed by Linnaeus had an hundred and fifty two large, and thirty two pairs of ſmall plates. Theſe plates are ſometimes as bright as burniſhed ſteel.

The black viper is employed by the Engliſh in medicine, inſtead of the common viper. It is very numerous in the woods along the Oka, a river in Ruſſia, which falls into the Wolga; it is there reckoned extremely venomous, and ſometimes has a few yellow ſpots on the neck and about the tail *. It is found in Germany, particularly on the mountains of Schneeberg; and Laurenti, who made obſervations upon it there, conſiders it as very ſlightly noxious: But, as his experiments were made in the beginning of November, it may ſtill be equally dangerous in Germany as elſewhere,

* Pallas, voy. en Ruſſ. vol. I. p. 59.

where, during ſummer, as cold weather is known almoſt univerſally to diminiſh the activity of animal poiſons. Sometimes the black viper threatens its enemy, before attacking it, by its hiſſings: But at other times, it attacks ſuddenly and furiouſly, ſuch as hurt or diſturb it, or ſuch animals as it means to prey on. Gmelin mentions olive oil taken inwardly, to the quantity of half a pint, and rubbed hot on the wound, as an antidote againſt the bite of the black viper. Black Viper.

Sp. V. *THE MELANIS* *.

THIS ſpecies is firſt deſcribed by Pallas, who found it on the borders of the Wolga and the Samara, in marſhy places, and among decayed vegetables. In ſize, form, and poiſon fangs, the melanis reſembles the adder; from which it differs in colour. The back is extremely black. The belly Melanis.

* Coluber. Melanis. ſyſt. nat. ed. Gm. 1. 1087. G. 125. Pall. It. 1. p. 460. n. 19.

Melanis.

belly is dark brown, and poliſhed like ſteel, with darker ſpots. On the ſides and about the throat there are ſome clouds of a bluiſh tinge. The eyes are very bright white, with brown irides; and the pupils are vertically elongated. The tail is ſhort and conical. The belly has uſually an hundred and forty eight plates, and the tail twenty ſeven pairs.

Sp. VI. *THE SCYTHIAN VIPER* *.

Scythian Viper.

WE are indebted to Pallas for the firſt account of this ſpecies, which is found in the woods which cover the Siberian mountains, even the moſt northerly; where its venom is ſaid not to be very dangerous. It reſembles the adder in form, and the melanis in colour. The back is a full black, like the former ſpecies; but the belly is a clear milk white. The head is ſomewhat heart ſhaped. The irides are yellowiſh.

* Coluber Scytha. ſyſt. nat. ed. Gmel. 1. 1091. G. 125. Pall. It. ii. p. 717. n. 37.

lowiſh. The uſual number of large plates is an hundred and fifty three, with thirty one pairs of ſmall plates below the tail. The total length is uſually rather more than a foot and a half, and of this the tail meaſures about a tenth part. Scythian Viper.

Sp. VII. *THE EGYPTIAN VIPER**.

THOSE who have felt for the death of Cleopatra, ſo famous for beauty and riches, for love and misfortune, will perhaps read with ſome intereſt what we ſhall now write concerning the ſpecies of ſerpent by the effects of whoſe venom ſhe choſe to end her miſeries. The fame of Cleopatra is ſo well known, that the ſerpent by which ſhe died muſt appear worthy of attention, even Egyptian Viper.

* Coluber Vipera. ſyſt. nat. ed. Gm. 1. 1085. G. 125. Muſ. Ad. Fr. ii. p. 43. Haſſelqu. Act. Upſ. 1750. p. 24. Do. It. 340. n. 60.—Aſpis Cleopatrae. Laur. amph. p. 105. n. 231.—La vipere d'Egypte. Encyclop. method.—Aſpis of ancient authors.

Egyptian Viper.

even to thoſe who do not generally enter into the ſtudy of natural hiſtory.

Haſſelquiſt, in his voyage to Egypt, firſt introduced this ſerpent to the knowledge of the learned. The head is enlarged into a kind of bump behind each eye. Its length is but inconſiderable. The ſcales on the upper part of its body are very ſmall. The colour is a dirty white, with brown ſpots. It has an hundred and eighteen large plates, and twenty two pairs of ſmall plates.

The ancient authors ſay that the poiſon of this viper, although mortal in its effects, occaſioned no pain: That ſuch as were bitten by it, loſt their ſtrength and powers gradually; they fell into an agreeable languor and gentle ſlumber, to which a deep and tranquil ſleep ſucceeded, which terminated in death. This was the reaſon which influenced Cleopatra, no longer able to ſupport life, after the death of Anthony and the victory of Auguſtus, to chuſe its miniſtry for ending her grief and life together. Whether the effects of this ſerpents bite be

painful

painful or not, it would appear that its venom is extremely active. It is employed in several pharmaceutical preparations in Egypt, with the same views as we employ the common viper in Europe; such as, the salt of vipers, dried vipers flesh, vipers grease, and others. Hasselquist informs us, that great numbers of this Egyptian viper are annually sent to Venice for the preparation of theriac, or Venice treacle. And in the time of Lucan, they were exported to Rome for the same purpose. We consider this ancient practice, which has continued to our own days, as a proof of this species being the one employed by Cleopatra; and the descriptions which we find in ancient authors, particularly in Lucan, of the aspis of Cleopatra, agree with those of the present species. From all these considerations, we have preferred, on this subject, the opinion of Laurenti*, and of other naturalists, to that of Linnaeus †, who considered the species named

Egyptian Viper.

* Specimen medic. in loco citato.

† Amoen. acad. 1763, vol. VI. p. 210.

Egyptian Viper.

named ammodytes as the aſpis of Cleopatra. It is probable we ſhould likewiſe refer to this ſpecies, what Pliny * writes concerning the aſpis; and the beautiful picture which that great writer gives of its attachment to its female, its courage in her defence, and the fury with which it purſues thoſe who have killed her.

"In Gmelins edition of the Syſtem of Nature, we have the following varieties of the Egyptian viper †.

β. Variegated. On the upper ſurface of the body, of a red colour variegated with grey and white, the belly and ſides yellow. Aſpis variegata, Laur. amph. p. 106. n. 223. Seb. muſ. ii. t. 2. f. 8. Said to come from America.

γ. Streaked. Of a reddiſh aſh colour, with tranſverſe white ſtreaks or veins, the head being elongated. Aſpis Cobella, Laur. amphib. p. 106. n. 232. Seb. muſ. ii. t. 2. f. 5. Likewiſe ſaid to be from America.

δ. Slen-

* Plin. hiſ. nat. cap. 8.

† Added by the tranſlator.

δ. *Slender.* The body ſlender and equal in ſize, having a longitudinal line on the back and on each ſide, that on the back dividing in two before the eyes. Aſpis inteſtinalis. Laur. amph. 106. n. 234. Seba muſ. ii. t. 2. f. 7. From Africa. Egyptian Viper.

ε. *Lacheſis.* Having an obſcure tranſverſe band at the region of the eyes. Cobra Lacheſis. Laur. amph. 104. n. 229. Seba muſ. ii. t. 94. f. 2.

In the two latter varieties the plates and ſcales are looſely connected, and are agitated on the appearance of any danger, ſo as to make a conſiderable ruſtling noiſe. In theſe two the colours are variable; ſome having white edges to the ſcales, in others they are blackiſh, and ſome few aſh coloured."

Sp.

Sp. VIII. *THE AMMODYTES* *.

Ammodytes.

WE find a great deal respecting this species of viper in ancient authors, and particularly in those of the middle ages. It is found in several of the eastern countries, in several parts of Italy, and in Illyria or Sclavonia. It receives its name, from its custom of concealing itself among the sand, which is much of the same colour with its back; which is variegated with a number of black spots, often so disposed as to form a notched longitudinal stripe, which gives it a considerable resemblance to the common viper or adder. The head of the ammodytes is, however, larger for the most part

* Coluber Ammodytes. syst. nat. ed. Gmel. 1. 1087. G. 125. Amoen. ac. 1. 506. n. 25. Weigel, 1. p. 11. Aldrov. serp. 169.—Vipera illyrica. Laur. amph. 101. n. 220.—Druinus. Bellon. 203.—Amiudutus. Avicennae. —Ammodyte. Encyclop. method. Bomare Dict. d'hist. nat. Mathiol. Com. sur Dioscorid. 950.—Aspide del corno.—Vipere cornue d'Illyrie—Cenchrias—Cerchrias —Cynchrias—Miliaris.

part in proportion to the body. It is eaſily diſtinguiſhable from all the other ſpecies of this genus, by means of a ſort of horn on the point of the muzzle; which is of a fleſhy ſubſtance covered with very ſmall ſcales, is moveable backwards, and is ordinarily about the ſixth part of an inch long*, and has on each ſide, at the orifices of the noſtrils, two ſmall projecting tubercles. From this naſal prominence, it has been named in ſeveral languages the horned aſpis or viper. Ammodytes.

The bite of this ſerpent is equally dangerous with that named aſpis by the ancients, and to which in this publication we have given the name of Egyptian viper. Some perſons, who have been bitten by the ammodytes, have died in three hours, while others have lived to the third day after, and ſome even to the ſeventh †. The

* Gmelin deſcribes the aſpic of this author, Coluber Aſpis of the Syſtem of Nature, as having an erect wart or horn on the noſe.—T.

† Mathiol. Com. ſup. Dioſcorid.

Ammodytes.

remedies which have been recommended againſt its bite, are nearly the ſame with thoſe which are uſed for the bites of other venomous ſerpents*. For this purpoſe, inciſions about the wounded part, compreſſion or ligature above the wound, cupping, enlargement of the wound itſelf: Internal remedies of various kinds, as counter-poiſons or antidotes: Scarifications, cauſtics, cautery; various unguents, plaſters, and cataplaſms.

"Perhaps the moſt effectual remedy yet employed againſt the bite of venomous ſerpents, is cauſtic volatile alkali, given in water internally, as ſtrong as it can be borne, and frequently repeated for a conſiderable time; beſides applying the ſame to the wounded part. Eau-de-luce, ſpirits of hartſhorn, or any ſimilar preparation of this ſubſtance that can be had, will anſwer the purpoſe. The ſame cure has been found effectual in ſtings from bees or waſps in the inſide

* See an extract from Fontana on this ſubject, in our diſſertation on the adder or common viper.—A.

inside of the throat, which sometimes happen in the cyder countries, on drinking new cyder in which there happen to be half drowned bees or wasps *." Ammodytes.

The ammodytes has an hundred and forty-two large plates on its belly, and thirty-two pairs of small plates under the tail. The top of the head is covered with small smooth oval scales, nearly similar to those on the back. The body seldom exceeds a foot in length, and the tail is very short in proportion.

This species feeds on lizards and other animals as large as itself; which it is able to swallow easily, owing to the great dilatability of its jaws, throat, and body, as described in our dissertation on the adder.

Perhaps a very hot climate may be necessary for this species acquiring its fullest developement; and that we should refer to

* The translator makes no apology for adding this paragraph, as it is impossible to insist too much on a subject in which human life is so immediately concerned.—T.

Ammodytes.

it the horned ſerpents ſeen by Boſman on the gold coaſt of Africa, although thoſe he deſcribes are much larger than the Sclavonian ammodytes. Boſman* deſcribes the ſkin of one which he ſaw in the Dutch fort at Axim: It was as thick as a man's arm, and meaſured five feet in length; being ſtreaked or ſpotted very prettily with brown, white, and yellow. According to this author, the African horned ſerpent was armed with a very ſmall, hard, white, and ſharp horn, or rather a kind of tooth, which ſtood out from the upper jaw near the noſe. The negroes often trample on theſe ſerpents by accident, in walking among the long graſs, and without injury; as they are extremely voracious, and, when gorged, fall into a deep ſleep, from which they are very difficultly rouſed.

Sp.

* Vide p. 273.

Sp. IX. *THE CERASTES**.

THIS name has been given to a venomous ſpecies of viper, which inhabits Arabia, Egypt, and Africa, a ſpecimen of which was tranſmitted to the royal collection, under the name of the horned viper. It is eaſily diſtinguiſhable from all other ſerpents, by a kind of horn which is to be found immediately above each eye. Probably from this ſingular conformation, and owing to its venomous power and natural habits, it became peculiarly noticed by the ancient Egyptians, among whoſe ſacred ſymbols or hieroglyphics its figure is very diſtinguiſhably placed, in the moſt ancient monuments that yet remain in Egypt. It is found engraved or painted on obeliſks, Ceraſtes.

* C. Ceraſtes. ſyſt. nat. ed. Gm. i. 1087. G. 125. Haſſelquiſt. Act. Upſal. 1750. p. 27. Do. It. p. 315. n. 61. Bellon. it. 203. Ellis, Phil. tranſ. LVI. t. 14. Bruce Abyſſ. V.—Le Ceraſte. Encyclop. Method. Bomare Dict. d'hiſt. nat.

Ceraſtes. on the columns of temples, at the feet of ſtatues, on the walls of palaces, and even on the mummies. On two large ſtones, brought from Alexandria to London, which ſtand in the court of the muſeum, and which appear to have belonged to the cornice of ſome magnificent palace, there are ſeveral figures of the ceraſtes exceedingly well engraved*.

Our curioſity, reſpecting an exact knowledge of the properties and habits of the ceraſtes, is doubly excited, as it not only is intereſting in natural hiſtory, but may perhaps tend in ſome meaſure to explain a part of that hidden, religious, philoſophical, and political language, through which we might acquire a knowledge of the ancient events, and opinions and inſtitutions, of that celebrated country and people. Though we can not develope all the natural habitudes of the ceraſtes, we ſhall endeavour to deſcribe its form exactly after ſuch ſpecimens as we have examined.

The

* Phil. Tranſ. Anno 1766.

The opinions of naturaliſts, both ancient and modern, have been exceedingly various reſpecting the number as well as the nature of the horns by which the ceraſtes is diſtinguiſhed from other ſerpents. Some authors ſay that it has two horns, others four, and even eight; which have been compared to the horns or feelers of ſnails, and other individuals of the claſs of worms*. Some authors have conſidered them as teeth growing from the outſide of the upper jaw. Some even allege that the ceraſtes is altogether deſtitute of horns; and that ſuch as are ſeen on ſome individuals are not natural, but cocks ſpurs artificially placed there by the Arabs, to render them extraordinary, that they might ſell at a high price. It is certainly poſſible, that ſmall artificial horns may ſometimes have been affixed to a true ceraſtes. It is likewiſe highly poſſible that, finding this ſerpent to be much ſought after, ſimilar ſerpents of a different ſpecies may have been Ceraſtes.

* Pliny and Solinus.

Ceraſtes. made to reſemble the ceraſtes by means of artificial horns. But it is perfectly certain, that the true ceraſtes actually has, above each eye, a ſmall pointed ſubſtance, to which the name of horn ſeems more applicable than any other term. In the Syſtem of Nature, Linnaeus deſcribes theſe bodies as ſoft *teeth*: But having examined the horns of the ceraſtes with great attention, having cut one into ſeveral pieces, and followed its progreſs to the head, we are perfectly aſſured that they have no attachment either to the upper jaw, or any other bone, and that they are moveable at the will of the animal. The term of tooth is certainly only applicable to ſuch bony ſubſtances as ariſe from ſockets in one of the jaws; which is by no means the caſe with the horns of the ceraſtes.

One of theſe horns is placed directly above each eye, and is rooted among the ſmall ſcales which form the upper part of the orbit; its baſe is ſurrounded by ſcales conſiderably ſmaller than thoſe on the back;

and

and each horn is in form of a ſmall four ſided pyramid, having a very diſtinct longitudinal groove or furrow on each face. Bellon compares theſe horns, or excreſcences, to grains of barley; and it is probably this fancied reſemblance which has occaſioned ſome ancient authors to relate that the ceraſtes conceals itſelf intirely under fallen leaves and graſs, leaving only its horns expoſed, as a bait for birds, on which it preyed by this contrivance. The horns are formed of coats or layers placed above each other. We have been able eaſily to ſeparate the external layer, like a thin epidermis or ſcarf, and which ſtill retained its ſquare form and four grooves, exactly like the remaining ſubſtance. In this manner of decompoſition or exfoliation, they exactly reſemble the ſcales, of which the outer coat or epidermis can be readily removed, eſpecially after they have tended a little towards putrefaction. Hence we conceive the horns to be exactly analogous to the ſcales; eſpecially as we have obſerved Ceraſtes.

that

Ceraſtes. that they are connected to the ſkin, exactly in the ſame manner as the ſcales are. The horns are moveable, and about one ſixth of an inch long.

The head of the ceraſtes is flattened; the muzzle thick and ſhort; the iris yellowiſh green, and the pupil is narrow or linear perpendicularly. The hind part of the head is narrower than the part of the body to which it is attached. The ſcales of the head are of the ſame ſize with thoſe on the back, or only a little leſs; and all the ſcales are oval, with a longitudinal ridge. In two individuals, which we have examined, there were an hundred and forty-ſeven large plates, and ſixty-three pairs of ſmall plates. The individual from which Linnaeus took his ſpecific character had an hundred and fifty large, and only twenty-five pairs of ſmall plates. In one examined by Haſſelquiſt, there were one hundred and fifty belly plates, and fifty pairs under the tail. This is a farther proof of what we have advanced, reſpecting the variable number of

of plates in the ſame ſpecies of ſerpent; but as every poſſible character muſt be had recourſe to, in an order whoſe ſpecies are ſo difficultly diſtinguiſhable from each other, it is always proper to enumerate the plates, along with other diſtinctive marks. Ceraſtes.

The general colour of the back is yellowiſh, with irregular ſpots of different degrees of darkneſs, in form of tranſverſe bands. The under ſurface of the body is brighter. Thoſe ſpecimens which we have examined meaſured more than two feet long, of which the tail was not quite five inches, being uſually ſhorter in proportion to the body than in the adder.

The ceraſtes can endure hunger and thirſt much longer than moſt ſerpents; ſome authors pretend even that it can exiſt five years without any nouriſhment. Shaw* relates, that he ſaw, in the poſſeſſion of one Gabrieli an apothecary at Venice, who had reſided long in Cairo, two ceraſtes which he had kept in a well cloſed bottle for five years

* Travels, V. ii. chap. 5.

Ceraſtes. years without any food, having only a little fine ſand at the bottom of the veſſel, in which they burrowed; and that, when he ſaw them, they were changing their ſkins, and ſeemed as vigorous as if newly taken.

Though able to live long without food, they are extremely voracious, and attack ſmall birds, quadrupeds, and reptiles with great eagerneſs. According to Belonius, their ſkin is capable of very great extenſion, and they can ſwallow food till increaſed to double their ordinary ſize; and, as their digeſtion is extremely ſlow, they become, when gorged, quite torpid and motionleſs, in which ſituation they are very eaſily killed.

Moſt writers of antiquity, and of the middle ages, conſidered this as one of the moſt noble ſpecies of ſerpents, and capable of turning and twiſting its body in every direction with the greateſt facility; inſomuch that it never advances ſtraight forewards, but always in curves, and winding from ſide to ſide; and always making a ſort of low hiſſing

hiſſing or ruſtling noiſe, by the motion of its hard ſcales on each other *. Yet however nimble may be its motions, it can very difficultly eſcape from eagles and other large birds of prey, which pounce upon it with great ſwiftneſs. Theſe birds were worſhipped by the ancient Egyptians, according to Diodorus, on account of freeing their country from venomous reptiles, particularly the ceraſtes. This ſerpent has always been conſidered as extremely cunning, both for catching its prey, and for evading its enemies. It has even been called deceitful, and it is ſaid to conceal itſelf in holes on road ſides, and in ruts, whence it throws itſelf unexpectedly on paſſengers. Ceraſtes.

It was principally with this ſerpent that the ancient Lybian conjurers, named *Pſylles*, played their tricks, without danger, pretending to have the power of faſcinating them ſo as to prevent them from biting,

* Conſult Lucan, Nicander, Aetius, Gyllius, Iſidore, &c.

Ceraſtes. ing, and to command them as they pleaſed*.

Belonius aſſures us, that the young of the ceraſtes are hatched within the body of the mother in the ſame manner as we have deſcribed in treating of the common viper. But it is proper to cite the following fact, recorded by Geſner †, on the authority of a correſpondent at Venice, which ſeems to contradict the aſſertion of Belonius. A Venetian nobleman kept three ſerpents which he had procured from the country of the ceraſtes, for a long time near a fire. One of theſe, a female, was thrice as large as the others, meaſuring three feet long, and was nearly as thick as a man's arm: Her head was flat, and about two fingers breadth; the iris black; the back ſcales aſh coloured, and blackiſh on the ridge; the tail a little reddiſh, and pointed. She had a horn, of the

* It is well known that the principal ſecret of ſerpent conjurers, both ancient and modern, conſiſted in extracting the poiſon fangs.—T.

† Fol. 38.

the ſame kind of ſubſtance with the ſcales, above each eye. From this deſcription, Geſner concludes ſhe was a ceraſtes, of which ſpecies it undoubtedly carries the principal character. This animal, while in poſſeſſion of the noble Venetian, laid four or five eggs, in the ſand in which ſhe was kept, nearly as big as pigeons eggs. Ceraſtes.

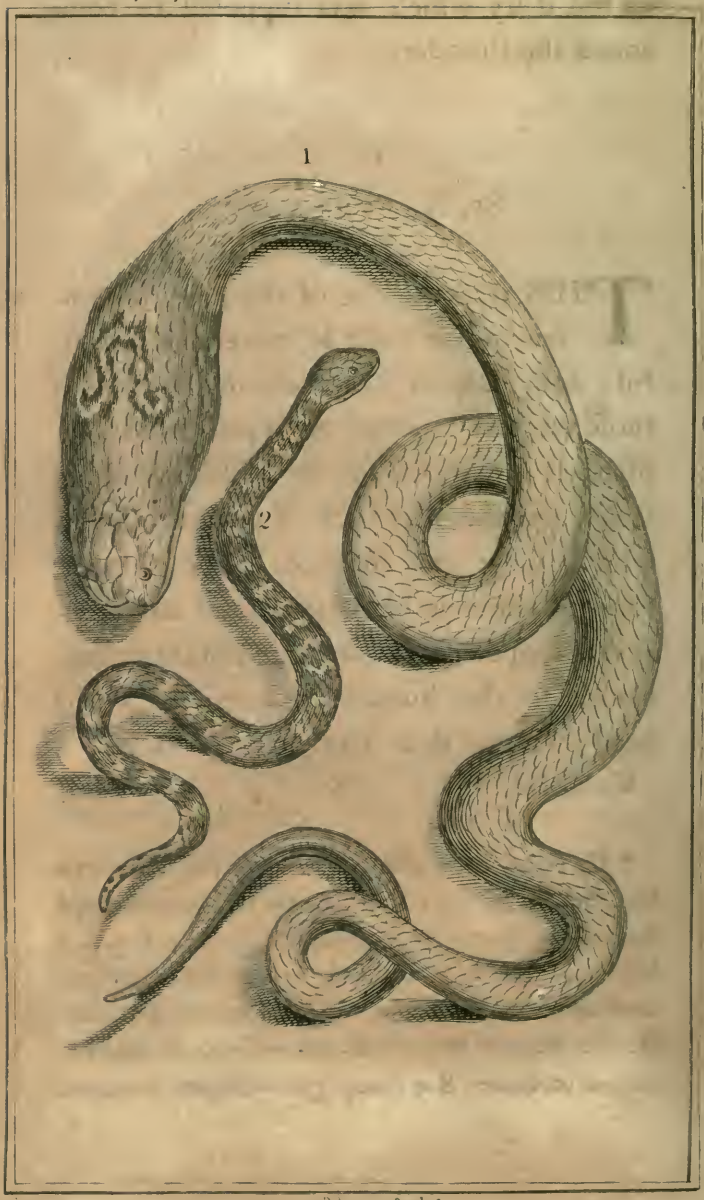
The reſemblances, in form, venom, and habits, between the ceraſtes and common viper, and likewiſe with a great many other ſpecies of the genus which are known to be *viparous*, would incline us rather to adopt the opinion of Belonius on this ſubject; eſpecially as he travelled a good deal in the countries where the ceraſtes abounds. But as it is poſſible that ſome ſpecies of ſerpents may produce their young in both ways, as is known to be the caſe in ſome of the oviparous quadrupeds; and as it is worth while to determine whether, as has been alleged, all ſerpents that have poiſon fangs are viparous, or are hatched within the mother before protruſion, and are even

the

Ceraſtes. the only viparous ſerpents; we invite all future travellers, who may have an opportunity of examining into the habits of the ceraſtes, to endeavour to aſcertain this fact.

Herodotus mentions certain ſerpents, which were conſecrated to Jupiter, by the inhabitants of Thebes in upper Egypt, or rather to the Egyptian deity which correſponded with the Jupiter of the Greeks. According to that father of hiſtory, theſe ſerpents had two horns, and were innoxious. If Herodotus was not miſinformed on this ſubject, the holy ſerpents muſt have been of a ſpecies very different from the ceraſtes; but it is highly probably that he was better inſtructed in the figure, than in the qualities, of theſe ſerpents. It is moſt probable that they were of the ſame ſpecies with the ceraſtes, and equally poiſonous; and as they muſt have appeared, to the ancients, capable of killing as ſurely and ſuddenly as the thunderbolt of Jove, they were probably on that very account conſecrated

to



D.Lizars Sculp.

1.Naja,Sp.10. - 2.Bloody Viper, Sp.19.

to the deity which was ſuppoſed to command the thunder.

Sp. X. *THE NAJA**.

THIS ſerpent, one of the moſt venomous in the eaſt, is extremely beautiful; and, inſtead of producing terror, in thoſe who are ignorant of its poiſonous qualities, it is admired for the brilliancy of its ſcales, and the brightneſs of colouring, with which theſe are adorned. The ſingular form of the naja likewiſe attracts attention, as it is ſuppoſed to have ſome diſtant reſemblance to the human countenance in its head; nature thus ſtamping the face of a moſt Naja.

* C. Naja. Syſt. nat. ed. Gm. i. 1105. G. 125. Muſ. Ad. Fr. 30. t. 21. f. 1. Amoen. ac. i. 305. Kaempf. Amoen. ex. 565. t. 567. Seba, muſ. i. t. 44. f. 1. ii. t. 85. f. 1. t. 94. f. 1. t. 97. f. 1—4.—Naja luteſcens. Laur. amph. 91. n. 197.—Serpent à Lunettes. Encyclop. Method. Bomare Dict. d'hiſt. nat.—Cobra di capello—Serpens coronatus. Ray ſynop. 330.—Serpent couronné.

Naja. moſt noxious reptile with a coarſe image of the moſt noble of her works. This contraſt is neceſſarily pleaſing to the imaginations of the orientals, who are all fond of the wonderful; and has even impoſed on the early travellers from Europe, who have ſeemed to enjoy a ſtrange ſatisfaction, in diſcovering an imagined ſimilarity to the human face in a reptile of ſuch malignant nature; in like manner as the ancient poets have agreed to attribute the ſame reſemblances to terrible and fabulous monſters, creatures of their own invention, and never produced by nature.

This fancied reſemblance ariſes from a ſtripe of a different colour from the reſt of its body, which is found on the neck of the naja, is bent forewards on each ſide, and ends in two hooks turned outwards. Theſe coloured hooks, or bends of the double ſtripe, ſometimes form two circles, incloſing each a ſmall circular portion of the paler ground colour, and thus giving a faint reſemblance of two eyes, above which,

the

the curved double line forms a rude repre- Naja.
ſentation of a noſe; thus altogether having ſome likeneſs to the rude ſcratches of young attempters at drawing the human face. What has added to this ſlight reſemblance is that theſe marks are found on the neck of the naja, which is ſo much enlarged beyond the ordinary ſize of its body as to ſeem its head. At a diſtance, people conceive they obſerve the eyes of this ſerpent, in theſe circular marks; while the real head and eyes are placed beyond this ſingular enlargement of the neck.

The crooked double line, with its two ends bent outwards into hooks or circles, has a tollerable reſemblance to a pair of ordinary ſpectacles, which has occaſioned the naja to be often called the ſpectacle ſerpent. But to diſtinguiſh this Eaſt Indian ſpecies from the ſpectacle ſerpents of America, which follow the preſent article, we have adopted the term Naja, which is uſed by the natives of India, and which is employed by Linnæus and other naturaliſts.

Naja. Writers in natural hiſtory have enumerated ſix ſpecies of ſerpents with ſpectacle-like marks on their necks; but, on examining attentively the diſtinguiſhing characters, we have thought right to reduce them to three: The naja, now in queſtion, and the vipers of Peru and Braſil with ſimilar marks, which two do not perhaps differ much from each other. All the ſuppoſed varieties of naja, as given in authors, ſeem only to differ from each other in conſequence of age, ſex, or climate. Thus, for inſtance, in the Muſaeum of Seba*, there are figured two ſmall ſpectacle ſerpents from India, which appear to be only young najas of the ordinary ſpecies. Theſe only differ from the full grown naja, in a much leſs expanſion of the neck, probably owing to their early age, and in the ſhade or diſtribution of their colours. One of theſe was of a yellowiſh aſh colour, ſurrounded with tranſverſe purple bands, every fourth being

* Vol. II. tab. 89. f. 3. and tab. 97. f. 3.

ing broader than the reſt*. The other had its colours much leſs diſtinctly marked, and had probably been taken about the time of changing its ſkin. Naja.

The full grown naja is of an uniform yellow colour, more or leſs tinged with aſh colour, or with reddiſh brown, according to differences of age, or ſeaſon, or vigour. Behind the expanded part of the neck is a tollerably broad collar, of a dark brown colour, which often diſappears almoſt intirely in ſpecimens preſerved in ſpirits. The bright yellow of the back, turns paler on the ſides, and changes to whitiſh on the belly, which is ſometimes tinged with red. The ſpectacle-like mark, on the expanſion of the neck, is whitiſh, edged on each ſide with black, or dark brown. Sometimes theſe ſhades alter conſiderably after the death of the animal; which has given occaſion

* Laurenti, in his Amphibia, p. 91. n. 198. conſiders this as a diſtinct ſpecies, under the name of naja faſciata, or barred naja.—A.

Naja. caſion to frequent erroneous deſcriptions and figures of this reptile.

The top of the head is covered by nine large plates or ſcales, arranged in four rows; two in the firſt, immediately on the noſe or muzzle, two in the ſecond, three in the next, and two in the backmoſt row. In this conformation we have another inſtance of what was alleged in the preliminary diſcourſe, that all thoſe ſerpents which have poiſon fangs have not their heads covered with ſcales like thoſe on the back. The eyes of the naja are extremely brilliant. The ſcales of the back are oval, flat, and long, being attached to the ſkin only at their anterior ends, and the animal has the power of erecting them very diſtinctly. On the enlargement of the neck, theſe ſcales are placed in longitudinal rows, not touching each other, and leaving ſtripes of the naked ſkin between the rows. The ſkin is of a yellowiſh white without any particular brightneſs; while the ſcales, eſpecially in ſunſhine,

ſunſhine, reſemble ſo many ſplendid little mirrors of burniſhed gold. Naja.

The expanſion on the neck is formed by the ribs, which in this part are a good deal longer than on the reſt of the body, and have no ſenſible curvature for a conſiderable diſtance from the back bone. Beſides this, the naja is able to ſwell out the ſkin over this part of the neck to a conſiderable ſize, which has occaſioned Kempfer to compare the expanſion to wings. It is principally when irritated, that the naja ſwells out its neck in this manner; and when its body is erected, with the head and neck held horizontally, it appears cloathed in a ſort of hood, which ſome have compared to a crown. Hence this beautiful and dangerous reptile has been called ſometimes the hooded ſerpent, and ſometimes the crowned ſerpent.

The female naja* wants the ſpectacle-like mark on the neck, but has the ſame membranous expanſion equally diſtenſile

* Seba, Vol. II. pl. 90. f. 2. and pl. 97. f. 2.

Naja. with the male, from which ſhe is eaſily diſtinguiſhable by this circumſtance. The female is adorned with the ſame brilliant colours as the male, and is equally called the hooded or crowned ſerpent. On account of wanting the ſpectacle-like mark, Laurenti has been induced to conſider the female naja as a diſtinct ſpecies, which he has named naja-non-naja.

The naja is uſually about three or four feet long. The total length of the ſpecimen in the royal collection, from which our deſcription is drawn, was four feet four inches and a half, of which the tail was almoſt eight inches. The membranous expanſion of its neck exceeded three inches in breadth. It had an hundred and ninety-ſeven large plates, and fifty-eight pairs of ſmall plates; while that deſcribed by Linnaeus had an hundred and ninety-three of the former, and ſixty pairs of the latter.

The naja is extremely fierce, and its bite produces death very ſpeedily if the proper remedies are not made uſe of in time. The

perſon

perſon bitten either dies in convulſions, or the wounded part becomes gangrenous, and is ſcarcely curable. Hence the Indians, who go about with naked feet, are more afraid of this than of any other ſerpent. When the naja is about to attack any one, it erects its body, extends the membranous expanſion of the neck, opens its mouth, and ſhows its ſharp poiſon fangs, then ſprings on its enemy with great agility. Naja.

Yet, in ſpite of its deadly fangs, the Indian jugglers have contrived to tame it, and to exhibit this reptile as a ſhow to the people. In a ſimilar way, the mountebanks of modern Egypt and of ancient Egypt, Cyrene, and Cyprus, have long been in uſe to make ſimilar exhibitions; handling without fear, and tormenting with impunity, large, and even, perhaps, venomous ſerpents. They are ſaid to gripe them hard by the neck, by which they are unable to turn and bite, and to tear them in pieces with their teeth, and devour them alive; while the ſerpents, hiſſing with rage, and wreathing in folds a-

round

Naja. round the arms and bodies of their deſtroyers, were unable to do any injury, or to eſcape from their graſp *.

Shaw † writes, that he has been aſſured that more than forty thouſand perſons, in Cairo and its ſurrounding villages, lived on lizards and ſerpents, without other food; from which circumſtance, among other privileges, they have the diſtinguiſhed honour of walking next in proceſſion to certain rich tapeſtries, embroidered in black ſilk, which are annually made at Cairo for the Kaaba at Mecca. On a particular day theſe tapeſtries are taken from the caſtle of Cairo, and carried, with great pomp and ceremony, through the ſtreets of the city, accompanied by a vaſt number of theſe ſerpent eaters, dancing and ſinging, and, at certain regulated intervals, making all kinds of ridiculous and fantaſtical geſtures and contorſions.

The

* Savary, Lettres ſur l'Egypt, i. 62.

† Travels, Vol. II. ch. 5.

The East Indian jugglers, who have the art of managing the naja, go about from city to city shewing their dancing serpents, as they call them. On these occasions, the juggler holds a particular root in his hand, which he pretends has the power of insuring him against the venomous bite of his serpent. Taking the serpent from a close vessel, in which it is ordinarily kept confined, he enrages it by threatening it with a stick or his fist: The naja immediately erects itself upon its tail in a posture of defence, blows up its neck, opens its dreadful mouth, with a hissing noise, thrusting out its long forked tongue, and agitating itself with great vivacity, while its eyes gleam like fire, begins a kind of combat with its master, who continues to threaten it with his fist, which he moves continually and briskly up and down, and from side to side, singing all the while. The terrified or enraged naja, keeping its eyes constantly fixed on the hand which threatens it, follows every motion, balancing its body Naja.

Naja. dy and head on its tail, which keeps always fixed in the ſame ſpot; and thus gives the appearance of a kind of dance. The naja can continue this kind of exerciſe for about half a quarter of an hour; but when ever the juggler perceives that his ſerpent grows wearied, and is about to fly from the combat, he gives over his ſong and removes the threatening hand. The naja now ceaſes its ſeeming dance, and extends itſelf on the ground; when the maſter ſeizes it by the neck, and replaces it in its box or jar.

Kempfer informs us, that, when an Indian intends to train up a naja in this manner, he turns it out of the jar in which it is kept, and, when the naja attempts to eſcape, he ſtops it with a ſtick, and teazes it to fight him, which indeed it very often firſt begins without provocation. Holding the ſtick in one hand, and the empty jar in the other, every time the naja attempts to bite he preſents the jar to it as a ſhield, which hurts its noſe, and obliges it to ſtart back. He continues this ſpecies of fencing

for

for a longer or ſhorter time, according as the naja is able for the exertion, or advanced in its leſſon. Always foiled in its attack, and hurt againſt the jar every time it attempts to bite, the naja at length gives over the vain efforts of biting; but, conſtantly keeping its neck diſtended and its tongue and teeth diſplayed, it keeps its eyes perpetually fixed on the hard ſubſtance which threatens it and hurts it, and follows every motion. The maſter, however, muſt be careful not to fatigue his pupil over much in this exerciſe, leaſt it ſhould become too timid, and refuſe in future to join in this ſeeming combat. He gradually accuſtoms it to erect itſelf againſt the jar firſt, and, after it no longer attempts to bite, againſt his naked hand, and to follow all his motions, with its neck proudly blown up; it now dares not bite, being accuſtomed always to get hurt ſeverely; and as the maſter always accompanies this exerciſe with a kind of muſic, gives it the appearance of a kind of dance. In this way the deadly Naja.

naja,

Naja. naja, as well as almoſt all the dangerous animals on earth, may be tamed merely by the influence of that fear which they inſpire.

The Indian jugglers, however, do not ſolely truſt their own ſafety to the influence of that terror which they have accuſtomed the naja to feel; but endeavour, in a great meaſure, to diſarm the ſerpent of its venom. Kempfer relates, that they are in uſe daily, or every other day, to exhauſt as much as poſſible the venom from the poiſon bags beſide the upper jaws. For this purpoſe they irritate the naja to bite frequently a piece of cloth or other ſoft bibulous ſubſtance. They even have the courage and addreſs to ſeize the reptile by the head, and to preſs out the venom while its fangs are fixed in the ſpongy ſubſtance, which thus ſucks up a greater quantity of the venom. After this, they are very careful not to allow the naja any nouriſhment, particularly any freſh vegetables; as food ſoon enables it

it to resupply its poison bags with the venomous liquor. Naja.

Kempfer pretends that the plant named Mango or Ophiorriza, which grows plentifully in India, is an infallible remedy against the bite of this and other serpents, and against the sting of the scorpion, and the bite of a mad dog. He says, the virtues of this plant, as an antidote against venoms, were discovered by observing that the Mangoust or Indian Ichneumon eat of it when bitten by the naja; and alleges the plant got its name of Mango from that being the Portuguese name for the Mangoust. This quadruped is in fact the mortal enemy of the naja, which it always attacks with fury, and which it kills easily, seizing it in such a manner as to avoid any danger from its poison fangs.

The naja is not only an object of amusement to the Indians, but is likewise an object of their religious veneration, especially on the Malabar coast. Fearful of death from their venomous bites, and anxious to keep

Naja. keep them at a diſtance from their houſes, they have the ſtrange cuſtom of carrying food to their haunts. The temples or pagodas of their gods are adorned with images of the naja. If one of theſe reptiles ſhould happen to come into the houſe of a Malabar, or if he ſhould meet one in his road, inſtead of defending himſelf, or endeavouring to kill it, he addreſſes his prayers to it, and offers it preſents. The bramins are brought to addreſs their pious exhortations to the reptile; they proſtrate themſelves before it, and endeavour, ſo to ſpeak, to acquire its favour and forbearance by the moſt profound reſpect. Even ſo low can terror, ignorance, and ſuperſtition debaſe the divine reaſon of mankind.

In a deſcription of the coaſt of Malabar, in the general hiſtory of voyages, we have the following curious account of the ſuperſtitious veneration of the Indians for the naja. "Another kind of ſerpent, called nalle pambou, or the good ſerpent, is named

ed Cobra capel by the Portugueſe, becauſe its head is ſurrounded by an enlargement of the ſkin which has the appearance of a hood or kind of hat. Its body is enamelled with very bright colours, which make its appearance as beautiful as its bite is dangerous; its bite is only mortal, however, to thoſe who neglect to uſe the proper remedies. Divers repreſentations of this cruel reptile make a principal ornament of the pagodas; and to it the natives offer prayers and ſacrifices. When a Malabar finds one of theſe ſerpents in his houſe, he firſt intreats it reſpectfully to go out; he next endeavours to entice it away, by offering it milk or other food. If both theſe expedients fail, he next applies to the bramins; who come to the place, and repreſent in very eloquent terms to the ſerpent what motives ought to induce it to quit the good Malabars dwelling, ſuch as the humble reſpect and adoration he has ever ſhown for the whole race of ſerpents, and the like abſurdities. Naja.

Naja. "While Dellon resided at Cananor, one of the secretaries to the reigning prince was bitten by a naja, which was as thick as a mans arm, and nearly eight feet long; at first he neglected to apply the usual remedies, and the people who accompanied him brought him back to the city, and carried the serpent with them in a well closed jar. The prince, being informed of the accident, sent immediately for the bramins, who set forth to the serpent how important the life of so faithful an officer was to the state; and, joining threats to their prayers, told the serpent that it should be burned in the same funeral pile with the secretary, if he died. The serpent was deaf to remonstrances and prayers and threatenings, for the secretary fell a sacrifice to the force of its poison. The prince was extremely affected by the loss; yet, having reflected that his secretary might have been guilty of some secret sins, which had drawn down the anger of the gods, he ordered the serpent to be carried from the palace and restored

to

to its freedom, after making abundance of apologies and reverences to appeaſe its anger. Naja.

"An abſurd ſuperſtition induces a number of the inhabitants of Malabar to carry milk and other kinds of food into the foreſts and roads, for the ſubſiſtence of theſe ridiculous divinities. Some travellers have attempted a more reaſonable motive for this blind practice; ſuppoſing the ancient Malabars to have in this way endeavoured to prevent the najas from coming into their houſes, by furniſhing them with a ſufficiency of food out of doors.

"The cuſtom of the idolaters, never to kill a ſerpent, is very little attended to by the Chriſtians and Mahomedans of the country; as they deſtroy theſe abominable and noxious reptiles wherever they find them; thus rendering a very important ſervice to the natives. Serpents are, however, ſo very numerous in Malabar, that people are obliged to examine carefully every part of their houſes, even their beds, daily, o-

Naja. therwiſe they would be at all times in danger of periſhing by their venomous fangs."

It is pretended that a ſtone is ſometimes found in or near the head of the naja, which has been called the ſnake-ſtone, *pietra di cobra*, &c. and has been conſidered as an infallible antidote againſt the bite of this and all other venomous animals. It may be ſeen, from the ſubſequent quotation, how very little credit is to be given to this pretended antidote; which in fact was never found in the naja or any other ſerpent, but is merely an artificial production, either imported from India, or manufactured in Europe *.

Redi † has the following obſervations on this ſubject. "Among the productions of India,

* Even the ancient Druids had their ſnake-ſtone, and a moſt elaborate fable of its mode of fabrication, by a number of ſerpents. In all ages prieſts have uſed a thouſand ridiculous contrivances for impoſing on the ignorant and ſuperſtitious.—T.

† Obſervations, Col. acad. partie etrangere. Vol. IV. 541. & ſeq.

India, to which, on the faith of travellers, public opinion has attributed wonderful properties, are certain ſtones, which are ſaid to be found in the head of an extremely venomous ſerpent of that country. It is pretended that theſe ſtones are a ſovereign remedy againſt the effects of all kinds of venom; and this opinion has been confirmed by the authority of ſeveral learned men. Two experiments are recorded as having been ſucceſsfully made at Rome; one by Carlo Magnini on a man, and the other by Father Kircher on a dog. I have known theſe ſtones for ſeveral years, having ſome in my poſſeſſion; and I am convinced, by repeated experiments, which I ſhall here enumerate, that they do not poſſeſs the alleged power of counteracting the effects of venom. Naja.

"About the end of the year 1662, three monks of the order of St Francis, newly arrived from India, came to the court of Ferdinand II. Grand Duke of Tuſcany, who then reſided at Piſa. Among other

Naja. curiosities which they had brought with them, they boasted particularly of certain stones, which they said were found in the head of a serpent, described by Garcias da Orto, under the Portuguese name of cobra de cabelos, or hooded serpent. They asserted, that throughout all Hindostan, and the two great peninsulas of India, and particularly in the kingdom of Quam-sy, these stones were applied as a certain remedy against the bite of the viper, the aspis, the ceraستes, and all other venomous animals; and even to wounds from poisoned arrows or other weapons. They alleged that the sympathy between these stones and the venom was so great, that they stuck fast to the wound like so many cupping glasses; and never quitted their hold until they had sucked out all the venom, when they fell off of themselves, leaving the wounded person or animal quite cured. On purpose to clean them, it was necessary that they should be steeped in new milk until it had extracted all the venom which they had imbibed,

by

by which the milk acquired a greeniſh yel- Naja.
low colour. The monks offered to confirm their ſtory by experiment; and, while they were ſeeking vipers for this purpoſe, Vincenzio Sandrini, an experienced apothecary in the ſervice of the Grand Duke, having examined the ſtones, recollected that he had long been in poſſeſſion of ſimilar productions. On ſhewing theſe to the monks, they acknowledged their identity, declaring that they poſſeſſed the ſame properties with their own.

"The ſerpent ſtone is of a black colour, like touch-ſtone, with a ſmooth gloſſy ſurface, as if varniſhed. Some have a grey ſpot on one ſide only, and others on both ſides; ſome have no ſpot whatever, while ſome have a ſlight ſpot of dirty white in the middle and a bluiſh tinge all round. Moſt of them are of a lenticular ſhape, though ſome are oblong. The largeſt I have ſeen are about the ſize of the coin we call *groſſi*, and the ſmalleſt about the ſize of a *quatrino;* but they are moſtly of the ſame

Naja. weight, the largeſt ſeldom exceeding 73 grains, and the ſmalleſt being about 64; though I have ſeen one which exceeded 120 grains in weight."

After detailing the experiments, from which he concludes that the ſerpent ſtone poſſeſſes very little virtue as a counter-poiſon, he proceeds as follows: "I am thoroughly convinced that theſe ſtones are an artificial production, and my opinion is ſtrengthened by the evidence of ſeveral learned men, who have reſided long in India, on both ſides of the Ganges. They affirm, that they are manufactured by certain religious Indians named Jogues, who ſell them at Diu, Goa, Salſette, along the whole coaſts of Malabar, and of the bay of Bengal, in Siam, Cochin-china, and the principal iſlands of the Indian Ocean. A jeſuit writer mentions ſerpent-ſtones of a green colour; and attributes the ſame virtues to them as to the others. Having never ſeen any of theſe, I can only ſuppoſe them to be of the ſame nature with thoſe I have

have examined. I believe myſelf perfectly founded in denying the virtues attributed to both, and in ranking theſe Indian Jogues among other jugglers and mountebanks who impoſe on the ignorance of mankind. Theſe Jogues go about the principal cities of India, carrying the hooded ſerpent round their necks and arms; having previouſly, as Garcias da Orto affirms, taken care to extract all their teeth, and to deprive them of their venom. I have no heſitation in believing, that with ſuch precautions, they can allow themſelves to be bitten with impunity; and then find it eaſy to perſuade the ignorant people that they owe their ſafety to the application of theſe ſtones to the wound. Naja.

"If it be objected, as a proof of their virtue, the ſympathetic connection between theſe ſtones and the venom, by which they adhere ſtrongly to the envenomed wound: My anſwer is, that they attach themſelves as firmly to any common wound, and to any part of the body that is moiſtened with

blood

Naja. blood or other fluid, exactly in a similar manner with the terra sigillata, or any other absorbent bole." The opinion of Redi on this subject is intirely conformable with that of Fontana in his work on poisons *.

"Gmelin, in his edition of the System of Nature, adds the following varieties of the naja, on the authority of Laurenti and Seba.

β. Striped naja. Having reddish brown stripes or bands over the whole body. Laur. amph. p. 91. n. 198. Seba, mus. ii. t. 89. f. 3.

γ. Siamese naja. Of an ashen grey colour, the ridge of the back being reddish. Laur. amph. p. 91. n. 200. Seba, mus. ii. t. 89. f. 1. 2.

δ. Spotted naja. Of a reddish yellow colour, every scale having a white spot. Laur. amph. p. 91. n. 201. Seba, mus. ii. t. 90. f. 2.

Sp.

* See Vol. II. p. 68.

Sp. XI. *THE PERUVIAN VIPER* *.

Peruvian Viper.

THIS ſerpent is only known by the figure and deſcription given by Seba. However much it may reſemble the naja in other reſpects, we have thought it neceſſary to ſeparate it from that ſpecies, as it is not provided with the expanſile membrane on the neck, like the naja of India. It cannot be alleged that the individual in Seba was not old enough to have acquired that particular diſtinction, as it was as long as ſeveral najas which we have examined that had this expanſion. This ſpecies, which may be named the Peruvian ſpectacle-ſerpent, is extremely like the naja in other reſpects. The head is in a ſimilar manner armed with large ſcales; the neck is ſurrounded by a collar, or tranſverſe band, of

* Seba, muſ. ii. t. 85. f. 1.—Gmelin, in his edition of the ſyſtem of nature, quotes this ſpecimen from Seba as a naja.—T.—Serpent à lunettes du Perou.

Peruvian Viper.

of dark grey; the upper part of the body is reddiſh brown, variegated with white and grey; and the under ſurface is of a paler colour.

Perhaps we ought to refer to this ſpecies, a ſmall ſerpent of New Spain which is figured and deſcribed by Seba *, as having large ſcales on its head; the body is yellowiſh, circled with narrow brown bars, and it has a blackiſh collar on the neck.

Sp. XII. *THE BRASILIAN VIPER* †.

Braſilian Viper.

WE ſeparate this from the preceding ſpecies, from its having a ſlight membranous expanſion on each ſide of the neck; but it differs from the naja of India in the figure which it carries on this part. Inſtead

* Muſ. ii. t. 97. f. 4.

† C. rufus. Syſt. nat. ed. Gm. i. 1105. G. 125. Seba, muſ. ii. t. 89. f. 4.—Naja Braſilienſis. Laur. amph. p. 91. n. 199.—Serpent à lunettes du Breſil.

Inſtead of reſembling a pair of ſpectacles, this mark on the Braſilian ſpecies is like the figure of a heart, very deeply indented on the fore part, the apex being towards the tail, and having two black ſpots on each ſide, the largeſt of which are neareſt the head. The back is of a clear reddiſh brown, with ſome tranſverſe bars of darker brown. We know nothing of the habits of this ſpecies, which is only to be found in Seba. Braſilian Viper.

Sp. XIII. *THE LEBETIN* *.

THIS ſerpent is venomous, and is conſequently provided with poiſon fangs in the upper jaw. It was firſt mentioned by the great Linnaeus, in his deſcription of the Lebetin.

* C. lebetinus. Syſt. nat. ed. Gm. i. 1095. G. 125. Muſ. Ad. Fr. ii. p. 43. Forſk. Faun. Arab. p. 13. n. 6. —Lebetin. Encyclop. Method.—κεφη of the modern Greeks.

Lebetin. the Muſeum of Prince Adolphus. The lebetin is a native of the eaſt. The colour of its back is cloudy; and its belly whitiſh, with numerous ſmall ſpots of brown, according to Linnaeus, or black according to Forſkal. It has an hundred and fifty-five large plates, and forty-ſix pairs of ſmall plates.

"In Gmelins edition of the Syſtema Naturae, a ſpecimen is quoted as having only an hundred and fifty-two large, and forty-three pairs of ſmall, plates. He deſcribes the colour of the back as grey, with four rows of tranſverſe alternate ſpots; thoſe in the middle being yellowiſh, and thoſe at the ſides brown or black. The belly is whitiſh, with thick ſet black or brown ſmall dotes. The back ſcales are flat, oval, and blunt, with an elevated ridge in the middle. The head is broad, flattened, and heart ſhaped. The total length is below fifteen inches, of which the tail meaſures about four. Its bite is ſaid to induce a moſt profound

found and inconquerable ſleep, which ends in death *."

Sp. XIV. *THE HEBREW VIPER* †.

THIS venomous ſerpent, which of courſe has poiſon fangs in its upper jaw, is found in Aſia, and particularly in Japan, according to Seba. The upper parts of the body are reddiſh aſh colour, having a number of bright yellow ſpots with red brown edges, from the head to the extremity of the tail, ſo diſpoſed as to reſemble in ſome meaſure the characters of the Hebrew alphabet, from which the trivial name given it by Daubenton is derived. Sometimes Hebrew Viper.

* Added from the Syſtema Naturae, Gmelins edition.—T.

† C. ſeverus. Syſt. nat. ed. Gm. i. 1097. G. 125. Muſ. Ad. Fr. i. 25. t. 8. f. 1. Weigel Abh. Nat. Geſ. i. 22. n. 25. 26. Laur. amph. 81. n. 167. Seb. muſ. ii. t. 54. f. 4.—L'Hebraïque. Encyclop. Method.

Hebrew Viper.

times a ſmall aſh coloured ſtripe is obſerved between the eyes and near the noſtrils. The plates on the belly are very bright yellow, with blackiſh ſpots along the ſides of the body.

The large plates are uſually an hundred and ſeventy, and forty-two pairs of ſmall ones: But Gmelin enumerates two other ſpecimens, in one of which were an hundred and forty-three of the large plates, and thirty-ſeven pairs of ſmall ones; while the other had only an hundred and thirty-three of the former, and thirty-ſix of the latter.

Sp. xv. *THE CHAIQUA**.

THIS venomous ſerpent is found in Aſia where it is called *Chayquarona*, by the Portugueſe; and from which word the trivial name here uſed is contracted by Daubenton, with a ſmall variation, to adapt it better to the Engliſh orthography and pronounciation. It is of a grey colour, with two yellow or whitiſh ſtripes along the back, from the top of the head to the end of the tail. On each ſide of the neck there are nine round blackiſh ſpots, reſembling the gill holes of the lamprey. The plates are bluiſh, having uſually a ſmall black ſpot at each end of each plate. The female is diſtinguiſhed by wanting the black Chaiqua.

* C. ſtolatus. Syſt. nat. ed. Gmel. i. 1098. G. 125. Muſ. Ad. Fr. i. 26. t. 22. f. 1. Laur. amph. 95. n. 208. Seb. muſ. ii. t. 9. f. 1. the male, and the female in fig. 2.—Le Chayque. Encyclop. Method.

Chaiqua. ſpots on each ſide of the neck. The number of the large plates is uſually an hundred and forty-three, with ſeventy-ſix pairs of ſmall plates.

Sp. XVI. *THE MILKY VIPER* *.

Milky Viper. THIS venomous ſerpent has only two colours, black and white; but theſe are diſtributed with ſo much regularity and taſte, and ſo agreeably contraſted, as to form a model of elegance, and might ſerve as a pattern for the ornamental dreſs of a young beauty in ſecond mourning. The general colour is milk-white, with bright black ſpots arranged in pairs. The head is, on the contrary, black, with a narrow longitudinal white ſtripe from the muzzle to near the neck.

This

* C. lacteus. Syſt. nat. ed. Gm. i. 1102. G. 125. Muſ. Ad. Fr. i. 28. t. 18. f. 1. Laur. amph. 83. n. 173.—Le Lacté. Encyclop. Method.

This ſerpent is found in India*, and has two hundred and three large plates, with thirty-two pairs of ſmall plates. In the individual we examined, the length was eighteen inches; the back ſcales were hexagonal, or ſix ſided, with an elevated ridge. The top of the head was armed with nine large ſcales, in four rows, as already deſcribed in the naja, another inſtance of this conformation in a venomous ſerpent †. Milky Viper.

* Gmelin ſays likewiſe in South America.—T.

† The adder and ceraſtes are both unqueſtionably venomous, yet neither of them has this peculiarity of ſtructure, ſo that this obſervation leads to no concluſion.—T.

Sp. XVII. *THE CORALLINE* *.

Coralline.

THIS poiſonous ſerpent, which is found in India, muſt not be confounded with the red ſnake, which is called the coral ſerpent by the inhabitants of Guiana; which belongs to a different genus, and will be deſcribed hereafter. In the coralline, now under conſideration, there is no red whatever; while the other is of a moſt brilliant coral red. The whole upper part of the body, in the coralline, is ſea-green, with three narrow brown ſtripes, which extend from the head to the extremity of the tail. This ſpecies received its trivial name from Linnaeus, on account of the diſpoſition and appearance of its back ſcales, which reſemble ſmall branches of the white articulated

* C. corallinus. Syſt. nat. ed. Gm. i. 1109. G. 125. Muſ. Ad. Fr. i. 33. Seb. muſ. ii. t. 17. f. 1.—Le Corallin. Encyclop. Method.

culated coral. Theſe ſcales are round fore- Coralline.
wards, and pointed at their hinder extremity, and are placed in ſixteen longitudinal rows at a ſmall diſtance from each other. The ſcales on the ſides are rhomboidal, touch each other in the uſual manner, and are arranged in the ſame way with thoſe of other vipers.

The under parts of the body are paler than the back, with hoary ſmall ſpots. The large plates are uſually an hundred and ninety-three, with eighty-two pairs of ſmall plates. Its total length ſometimes exceeds three feet.

Sp. XVIII. *THE FIERCE VIPER**.

Fierce Viper.

THIS ſpecies is venomous, and is found in India, particularly in Ceylon. The head is whitiſh, is covered with ſmall ſcales like thoſe on the back, and is very large in proportion to the ſize of the body, with very large poiſon fangs. The top of the head is flattened, as are the cheeks; and over each eye there is one ſcale a little larger and more prominent than the reſt, as in the adder. The back is aſh coloured, with whitiſh ſpots; the ſcales being ſmall, oval, and ridged. The belly has alternate black and brown ſpots. The whole length of the ſpecimen deſcribed by Linnaeus was about eighteen inches; and the tail, which is very ſlender, is about a fifth part of that meaſure.

* C. atrox. Syſt. nat. ed. Gm. i. 1107. G. 125. Amoen. ac. i. 305. n. 35. Muſ. Ad. Fr. i. 33. t. 22. f. 2. Weigel. Abh. nat. Geſ. i. 32. n. 43. Laur. amph. 103. n. 226.—L'Atroce. Encyclop. Method.

measure. There are an hundred and ninety-six large plates on the belly, and sixty-nine pairs of small plates on the under side of the tail. Fierce Viper.

"Gmelin* quotes, as below, a variety of this species, but without any notice of difference, unless in having one more large plate: But the number of these plates, and of the pairs under the tail, do not seem by any means regularly constant."—T.

Sp. XIX. *THE BLOODY VIPER* †.

THIS venomous species is figured by Seba, who received one specimen from Persia, and another from Japan. The description here given was taken from a Bloody Viper.

U 4 specimen

* C. atrox, β. Syst. nat. ed. Gm. i. 1107. Seba, mus. i. t. 43. f. 4. 5.—Dipsas indica. Laur. amph. 90. n. 196.

† Seba, mus. ii, tab. 58. fig. 1. & 3.—L'Haemachate, in the French edition of this book.

Bloody Viper.

ſpecimen in the royal collection, but without a name, and with no notice of its native country. The trivial name here adopted is derived from red being its principal colour. The top of the head has nine large ſcales, arranged in four rows; two in the firſt and ſecond, three in the third, and two in the fourth. When the diſcourſe on the nomenclature and arrangement of ſerpents, prefixed to this volume, was drawn up, we did not know that any other venomous ſerpent, except the naja, had this particular conformation of the head ſcales. But having received a ſpecimen of the preſent ſpecies, and of ſome other venomous vipers with this particularity, while the work was at preſs, we have thus an additional reaſon for inviting naturaliſts to ſearch for evident and permanent external characters, by which venomous and innoxious vipers, and other ſerpents, may hereafter be diſtinguiſhed from each other with certainty and facility. Hence, too, it may be ſeen how neceſſary it was for us to employ ſeveral

ſeries

series of distinctive characters, in the formation of the systematic table of serpents, that the species might thereby be more easily known. Bloody Viper.

In this species, the upper jaw is armed with two hollow moveable poison fangs, provided with a kind of sheath. The back scales are lozenge shaped and smooth. In the living animal, the upper part of the body is red, more or less bright, varied with white spots, which are differently disposed in different individuals, and which give a variegated appearance resembling jasper. In specimens preserved in spirits of wine, the natural bright red becomes dull and brown. When alive, the under part of the body is yellowish; but it likewise becomes darker when preserved in spirits.

In our specimen, the total length is sixteen inches and a half, of which the tail measures about two inches. The belly is covered by an hundred and thirty-two large plates, and the under side of the tail by twenty-two pairs of small plates.

"In

Bloody Viper.

"In this article, the author quotes Seba as an authority: Unfortunately the tranſlator has no opportunity of conſulting that moſt extenſive work; and it ſeems ſingular that Linnaeus, and his laſt editor Gmelin, who both make great uſe of his figures, ſhould totally omit to quote this ſpecies." —T.

Sp. XX. *THE SNOWY VIPER* *.

Snowy Viper.

THIS ſpecies is venomous, and is found in Africa, particularly Lybia. Its whole body is an exceedingly brilliant white; but, according to Seba, the point of the tail is black, and there are a few very ſmall black ſpots to be ſeen on the body. Linnaeus,

* C. niveus. Syſt. nat. ed. Gm. i. 1108. G. 125. Muſ. de Geer.—Ceraſtes candidus. Laurent. ſpec. med. 175.—Natrix candida? Laur. amph. 74. n. 146? Le Sans-tache. Encyclop. Method.—La Tres-blanche. French ed. of this work, ii. 118.

D. Lizars Sculp.

1. Brasilian Viper, Sp. 21. - 2. Nasal Viper, Sp. 99.

naeus, on the contrary, says that it is absolutely without spot; and it is possible the spots observed by Seba may have been occasioned by injury from the spirits in which his specimen was preserved. Snowy Viper.

The snowy viper, which sometimes attains the length of five or even six feet, feeds on birds and small animals, which it readily kills, as its venom is very active. It has usually two hundred and nine large plates, and sixty-two pairs of small ones.

Sp. XXI. *THE BRASILIAN VIPER**.

THE specimen from which the description of this species was taken, was sent from Brasil to the royal collection. The top of the head is covered with oval scales, Brasilian Viper.

* Called La Brasilienne in the original. By some mistake this species is named the olive viper in the systematic table of this translation, which the reader is requested to correct.—T.

Brafilian Viper.

ſcales, having each a longitudinal ridge, and in every reſpect like thoſe on the back. The noſe or muzzle is very protuberant, and is terminated by a large ſcale, perpendicular to the direction of the noſtrils, which is rounded at its upper edge, and notched below to admit the paſſage of the tongue. The upper part of the body is marked by numerous, large, lozenge ſhaped, reddiſh ſpots, which are edged with blackiſh; and between theſe we find other very ſmall ſpots of different ſhades of brown. In our ſpecimen, there are an hundred and eighty large plates, and forty-ſix pairs of ſmall plates. Its whole length is three feet, of which the tail is five inches and a half. The poiſon fangs are about two thirds of an inch in length. But there are two jaws of venomous ſerpents from Braſil, in the royal cabinet, in every reſpect reſembling this, except ſize, in which the fangs are double this length. If theſe belonged to individuals of the ſame ſpecies, they moſt probably were ſix feet long. We have not found

Brazilian Viper.

scales, having each a longitudinal ridge, and in every refined like those on the back. The nose or muzzle is very prominent, and is terminated by a large scale, perpendicular to the direction of the mouth, and rounded at its upper edge, and covered with longitudinal ridges of the same. The upper part of the body is marked by numerous large irregular oval spots, and the intervals by small spots of different shapes. It grows to the length of three feet and upwards, and is a native of the Brazils. Its bite is said to be very dangerous.

1.Lance-shaped Viper, Sp.22–2. Triangle headed Viper, Sp.23.

found either figure or deſcription of this viper in any author; it muſt therefore be conſidered as a new ſpecies. Braſilian Viper.

Sp. XXII. *THE LANCE-SHAPED VIPER* *.

THIS venomous ſpecies has only been obſerved hitherto in Martinique: Perhaps it may likewiſe inhabit Dominique or Cayenne, or both, as M. Badier, a well informed naturaliſt, who lived ſeveral years in Guadaloupe, ſhewed me two individuals of this ſpecies, which he believed to have come either from Cayenne or Dominique. Lance-ſhaped Viper.

The lance-ſhaped viper is one of the largeſt venomous ſerpents, and one of thoſe which is endowed with the moſt active venom. It is, however, as yet very little known

* Vipere Fer-de-lance, in the original.—Vipere jaune de la Martinique. Nouvelles de la Rep. des Lett.—Couleuvre jaune ou rouſſe. Rochefort, Hiſt. nat. des Antilles, i. 294.

Lance-shaped Viper.

known to naturalists, and has never occurred to Linnaeus, or his last editor Gmelin. The specimen in the royal cabinet, from which our description is taken, was sent from Martinique. It has hitherto been named, by voyagers, the yellow viper; but as the yellow colour is by no means constant, half the individuals yet seen having been of a different colour, we have chosen to give it a new name, derived from the uniform figure of its head, which resembles the head of a spear or lance. The head is a good deal larger than the body, and its forepart is almost triangular, the three angles being formed by the muzzle and the two eyes. The openings of the nostrils are placed very near the tip of the muzzle. The eyes are large, oval, and placed obliquely.

In individuals which have acquired considerable size, a small aperture is distinctly perceptible on each side of the head, between the nostrils and the eyes, which are supposed to be the external openings of the auditory

auditory paſſages: Theſe are very obſervable in the ſpecimens of the royal cabinet. Theſe holes are certainly the orifices of two tubes which penetrate beneath the orbits, and which probably terminate in the organ of hearing; but, as we have only been able to examine ſpecimens that had been long preſerved in ſpirits, we cannot abſolutely vouch for this fact, which is the more intereſting as, hitherto, no external orifice of the ears has been obſerved in ſerpents. If this fact or opinion were properly verified, we ſhould then be aſſured that the lance-ſhaped viper is provided with external ears, in like manner as the various ſpecies of lizards; only that in the latter theſe openings are behind the eyes, as in birds and quadrupeds. Lance-ſhaped Viper.

On each ſide of the upper jaw, we find always one, ſometimes two, or even three, poiſon fangs, ſhaped like a hook, and frequently as thick as a ſhoemakers awl. Theſe are in every reſpect ſimilar, in ſtructure and uſe, to the fangs already deſcribed under

Lance-shaped Viper.

der the article common viper. According to the author of the memoir on this ſerpent, in the Nouvelles de la Repub. des Lettres, each fang has a ſac or reſervoir at its root, capable of containing about half a tea ſpoonful of venom. Not having been able to diſſect any recent ſpecimens of this ſpecies, we cannot pronounce with certainty on this ſubject; but ſhould ſuppoſe the true reſervoir of the venom will be found, as in the common viper, at the two extremities of the upper jaw; from whence it is brought to the root of the fangs, by particular ducts.

The venom of this ſpecies is almoſt as fluid as water, and of a yellowiſh colour, like olive oil beginning to grow rancid. The bite of this viper produces a ſevere pain, ſimilar to burning; and is followed by exceſſive oppreſſion. But this venom, which has no ſenſible taſte or ſmell, ſeems only dangerous when it is either inſtilled in conſiderable quantity, or when it mix-

es

es with the blood *; as the moſt recent wounds, given by the poiſon fangs of this and other ſpecies of venomous ſerpents, may be ſafely ſucked by the mouth. On the whole, it is obvious, by comparing what is recorded reſpecting the lance-ſhaped viper, with what we have formerly written concerning the common viper, that the venom and its organs and fangs, in this ſpecies, are in every circumſtance nearly at leaſt the ſame with thoſe of the common viper. Lance-ſhaped Viper.

The tongue is very long and ſlender, and moves with great rapidity. The back ſcales are oval and have a longitudinal ridge. The general colour is yellow in ſome ſpecimens, and greyiſh in others †. And it is certain that theſe different colours do not

* It is more than probable, by the diſcoveries and obſervations of recent anatomiſts and phyſiologiſts, that the venom of vipers act through the lymphatic veſſels, and not by means of the blood veins.—T.

† Rochefort, as before cited at the head of this article.

Lance-shaped Viper.

conſtitute different ſpecies, as they are both to be found mixed in the ſame litter*. Perhaps the one may be the male, and the other the female. We have ſeen, in the collection of M. Badier, a variety of this ſpecies, in which the back was marbled with various tints of livid and brown; and which had a deep brown ſpot, placed longitudinally on each ſide of the head behind the eyes.

In one ſpecimen, which meaſured fourteen inches two lines, and of which the tail was two inches one line, we counted two hundred and twenty-eight large plates, and ſixty-one pairs of ſmall plates. And in a larger ſpecimen, two feet ſix lines in total length, there were only two hundred and twenty-five large plates, and fifty-nine pairs of ſmall ones.

When this viper means to attack any perſon or animal, it rolls itſelf up in a ſpiral form, and, uſing its tail as a fulcrum, ſprings with the rapidity of an arrow; but is

* Memoir, already cited in this article.

is ſeldom able to leap to any conſiderable diſtance. It has by no means the activity of many other ſerpents; but, eſpecially when the weather is the leaſt cool, remains very much in a torpid ſtate, concealed among leaves, or in decayed trees, or in holes of the earth. It very ſeldom comes into houſes or huts in the country, and is never ſeen in towns; but is often found in cane pieces, where it feeds on rats. It never aſſails mankind, except when attacked or irritated; and never bites till it has worked itſelf into a kind of rage. Its approach is readily diſcovered by a ſtrong fetid odour which it emits, and by the cries of birds, particularly one called the white-neck by the planters. Theſe birds probably miſtake this ſerpent for one of thoſe which purſue them into the trees; and they evince their terror and antipathy, by flocking about this reptile, uttering continual piercing cries. When any perſon is ſurpriſed by this ſerpent, its attention is eaſily occupied, by preſenting a bunch of leaves, Lance-ſhaped Viper.

Lance-shaped Viper.

a twig, or any such object, until the person can get some offensive weapon; one single blow is generally sufficient to kill it. After cutting off its head, the body continues to move somewhat like a worm for a considerable time.

The lance-shaped viper propagates in March or April, and the union continues for several days, during which the individuals are twisted together like two intertwined ropes. At this time they are very dangerous to come near; as their motions are then greatly more alert, and their venom much more active. We are told, in the memoir already quoted, that the female carries her young for six months; which is a great deal longer than the gestation of the common viper, which is only between two and three months. Perhaps this difference may be owing to the different sizes to which these species grow, as the species in question attains to double the length of the common viper *.

According

* French philosophers on every occasion hazard theoretic

Lance-shaped Viper.

According to ſome travellers, the young of this ſpecies come into the world perfectly formed, and the mother continues to crawl all the time of her delivery. But, according to M. Bonodet, in the memoir already quoted, they only get quite of the enveloping membranous egg immediately after they are dropt. Each brood contains from twenty to ſixty young ones; and it is ſaid the numbers are always even. When they firſt come into the world, they are about the ſize of common earth worms, and from ſeven to eight inches long. When full grown, they are full ſix feet long, and three inches diameter where thickeſt. Some rare inſtances occur ſuperior to theſe meaſures.

This ſerpent feeds on lizards, rats, poultry, game, and even on cats. Its mouth

oretic explanations, without conſideration, inquiry, or authority. On this principle, the female of the enormous boa, to be afterwards deſcribed, ſhould carry her young at leaſt five years; as the length of that reptile ſometimes exceeds thirty feet.—T.

Lance-shaped Viper.

and throat are capable of vaſt diſtention, in ſo much that one has been known to ſwallow a ſucking pig. But we are told, that one of them, having ſwallowed a pretty large opoſſum, ſwelled ſoon after, and died. When any prey, that it has ſeized, eſcapes, it follows its footſteps ſlowly and with difficulty; yet, being very quick of ſight and ſmelling, it ſeldom fails to ſucceed at laſt, eſpecially as the flying animal ſoons drops in conſequence of the envenomed wound. In ſwallowing any animal, it always begins by the head; and, when its morſel happens to be large, it often remains a long while on the ſpot ſtretched out in a ſtate of ſtupefaction, until digeſtion is ſomewhat advanced. Its digeſtion is very ſlow; and when one of them is killed ſome time after a good meal, the fetor of its body is quite inſupportable.

Notwithſtanding the diſguſt which this reptile muſt naturally excite, ſome negroes, and even whites, have ventured to eat it, and have found its fleſh good. Notwithſtanding,

ſtanding, it is evident, that the horrible ſtench which exhales from it when living, muſt remain after death, ſo as to render it as diſguſting as an aliment as its venom is dangerous *. Lance-ſhaped Viper.

Different opinions are entertained reſpecting the activity of the venom of this ſerpent. One author ſays, that there is no inſtance of any one eſcaping who had been bitten by the lance-ſhaped viper. That all died in great agony, and ſome within ſix hours after the bite; even alleging that the bite of young individuals of the ſpecies was mortal, but that in ſuch inſtances the wounded part does not ſwell, and the wounded perſon only experiences ſlight pain, or even none; and that it often produces paralytic affections of parts diſtant from thoſe which are bitten. It is melancholy to read of the numberleſs remedies which have been unſucceſsfully applied to

* This laſt reflection is evidently a mere unfounded theory, and in direct contradiction to the ſimple fact narrated in the preceding ſentence.—T.

Lance-shaped Viper.

ſave the lives of thoſe miſerable wretches who have been bitten by this ſerpent, and that all which could be accompliſhed was merely to aſuage the pains of the ſufferers, who were ſure to expire a few hours after being wounded.

On the contrary, another writer affirms, that, except in particular circumſtances, the remedy, which is known to the negroes and mulatoes, is both certain and quick in effecting a cure; and that the means of obtaining it are eaſy, ſimple, and abundant. That ſeveral inſtances have been ſucceſsful, in which the remedies were not attempted till twelve or even fifteen hours after the accident. That the ſituation of the perſon affected is by no means painful: And that, when the patient dies, he never comes out of the profound lethargy into which he falls immediately on being bitten *.

The

* Theſe two ſtories can hardly be ſuppoſed to apply to the conſequences from the bite of the ſame ſpecies. —T.

Lance-shaped Viper.

The virulence of the venom, in this ſpecies as in others, muſt differ according to the age of the individual, the ſeaſon of the year, the temperature of the air, and various other cauſes. But wherefore ſhould a being of ſuch terrible qualities be permitted to exiſt in our iſlands, whence it is certainly poſſible to extirpate the race? Inſtead of confining our views to ſearch for antidotes, too often ineffectual, every exertion ſhould be uſed to extirpate ſuch venomous reptiles from countries inhabited by mankind*.

SP.

* Perhaps the animals uſually denominated noxious are uſeful to man, in a degree conſiderably greater than the injury they produce, by leſſening the numbers of other deſtructive and noxious animals. But this ſubject is too extenſive to be diſcuſſed in a note.—T.

Sp. XXIII. *THE TRIANGLE-HEADED VIPER* *.

Triangle-headed Viper.

WE have chosen to affix this name to a species sent to the royal cabinet, under the name of viper of St Eustathius. It has considerable resemblance, in the disposition of its colours, to the common viper, being of a greenish colour, with spots of different shapes on the head and body, uniting on the latter into an irregular longitudinal stripe.

The name here given is derived from the shape of its head, the two extremities of the upper jaw forming two very prominent angles. It has poison fangs; and the scales on the head are similar to those on the back, which are lozenge-shaped and smooth, without any ridge, like those on the common viper. Immediately behind the head the body is very slender. Our specimen was two feet long, of which the tail measured

* La Tete-triangulaire in the original.

sured near four inches. The belly was covered by an hundred and fifty large plates, and the under surface of the tail by sixty-one pairs of small plates *. Triangle-headed Viper.

Sp. XXIV. *THE DIPSAS* †.

ACCORDING to Seba, this venomous species is found in America, particularly in Surinam. The scales on the body are bluish green with whitish edges, and oval. The belly plates are an hundred and fifty-two, and white. The tail is long, very slender, and has an hundred and thirty-five pairs of small plates on its under surface, Dipsas.

* In the systematic table, the pairs of tail plates are set down as sixty-four.—T.

† C. dipsus. Syst. nat. ed. Gm. i. 1111. G. 125. Amoen. ac. 1. 302. n. 29. Gronov. Mus. 64. n. 30. Boddaert, nov. act. Caes. vii. p. 24. n. 31. Grew, Mus. ii. 64. n. 30. Seba, Mus. ii. t. 24. f. 3.—Le Dipse. Encyclop. Method.

Dipsas. surface, on which is a longitudinal bluish narrow stripe *.

Sp. XXV. *THE ATROPOS* †.

Atropos. THIS venomous serpent, which is found in America, well deserves the above name, which was given to it by Linnaeus; and this dangerous reptile is most deservedly dedicated to one of the fates, on account of the violent poison which distils from its murtherous fangs. The head is somewhat heart-shaped and gibbous, having four or more black spots, and is covered by oval or lance-shaped scales ridged on their middles, similar to those on the back. The general colour is whitish or hoary, having four rows of pretty large brown spots, each having

* Gmelin quotes a specimen having 155 large and 123 pairs of small plates.—T.

† C. Atropos. Syst. nat. ed. Gm. i. 1086. G. 125. Mus. Ad. Fr. i. 22. t. 13. f. 1.—Cobra Atropos. Laur. amph. 104. n. 230.—L'Atropos. Encyclop. Method.

ing a ſmall white ſpot in the middle. The belly has an hundred and thirty-one large plates, and the tail has twenty-two pairs. Atropos.

Sp. XXVI. *THE LEBERIS* *.

THIS ſpecies is introduced here and into the Syſtema Naturae, on the authority of Kalm, who found it in Canada. The upper part of the body is thickly covered with narrow tranſverſe black ſtripes. The belly has an hundred and ten large plates, and the under ſide of the tail fifty pairs of ſmall ones. It is venomous. Leberis.

Sp.

* C. leberis. Syſt. nat. ed. Gm. i. 1086. G. 125. Kalm. it.

Sp. XXVII. *THE TIGRINE* * †.

Tigrine.

WE are ignorant of the country from whence this venomous viper was tranſmitted to the royal cabinet. Its head is a good deal like that of the common viper, being covered with ſmall oval ſcales, having a longitudinal ridge, and reſembling thoſe on the back. The upper part of the body is reddiſh white, having deeper coloured ſpots edged with black, from which the trivial name here adopted is derived. In our ſpecimen, the total length was thirteen inches and a half, of which the tail meaſured two inches. The belly plates were two hundred and twenty-three, and the pairs under the tail ſixty-ſeven.

II. SUB-

* In the Syſtema Naturae, there is a ſpecies named the C. tigrinus, different from this, to be afterwards mentioned.—T.

† La Tigree, in the original.

D. Lizars. Sculp.

1. Green and yellow Viper, Sp. 28. 2. Collared Viper, Sp. 29.

II. SUBDIVISION.

OVIPAROUS VIPERS, or vipers which produce eggs, from which their young are afterwards hatched.

SP. XXVIII. *THE GREEN-AND-YELLOW VIPER* *

HITHERTO we have only treated of venomous ſerpents, having dangerous and concealed arms, imbued with mortal poiſons, which have only ſupplied us with terrible deſcriptions and pictures of horror. We have not only ſeen theſe produced in the tropical and burning regions of Aſia, Africa, and America, but have found them ſupporting the rigours of the northern climes, ſpreading themſelves over Europe,

Green-and-yellow Viper.

* La Verte-et-jaune, in the original.—La Couleuvre commune. Encyclop. Method.—Serpent familier. Bomarre, Dict. d'hiſt. nat. in voc.

Green-and-yellow Viper.

Europe, infesting the country which we inhabit, and even insinuating themselves into our dwellings. Surrounded by these messengers of death, we have in some measure viewed our earth as veiled in mourning garbs; and nature, instead of spreading the blossoms of fertility and life, seems to have multiplied the seeds of destruction *. Our mistaken imagination hath poisoned the cup of our purest enjoyments; and the fine season of the year, when all creatures are called on to the joys of love and the duties of reproduction, seems only to awaken a mortal enemy secretly armed against our lives. Impressed with these false ideas, the fresh verdure of spring, the richest enamelled flowers, spread out in simple magnificence by the bountiful and all preserving hand of Nature, seem only to our eyes a perfidious, though beautiful, carpet extended by the demon of destruction, to conceal the terri-

blo

* See a much more beautiful and more philosophical view of this subject, in the Introduction to the Animal Kingdom of Linnaeus.—T.

ble haunts of venomous ſerpents, laying in wait to inflict the moſt painful and certain death. Even the benign influence of the ſuns vivifying and pureſt rays ſeems only to pervade the atmoſphere on purpoſe to invigorate the direful venom of theſe horrid reptiles. Green-and-yellow Viper.

We now haſten to efface theſe ingracious views, by preſenting a fair picture of Nature, in all her genuine purity and glory. Thoſe vipers * which we have to deſcribe in the ſequel have no fangs, and poſſeſs no venom. They only offer to our conſideration agile movements, elegant and light proportions, and ſoft or brilliant colours. The more we are familiarized to them, the more ſhall we be pleaſed to meet with them in our woods, our fields, and gardens. Theſe cannot diſturb the pleaſures of our

* In French, the author makes a diſtinction between vipers, which produce their young completely formed, and couleuvres, which produce eggs. The Engliſh language does not admit this preciſion; but forces us to uſe the word viper for both.—T.

Green-and-yellow Viper.

rural habitations; but may increaſe our enjoyments, by the beauty of their tints, and the vivacity of their motions, adding to the ornaments of the fields, and helping, with other animated beings, to embelliſh the vaſt and magnificent vernal theatre of Nature.

We ſhall begin this ſubdiviſion of the genus, by deſcribing thoſe ſpecies which are found abundantly in Europe. Among theſe ſerpents, for the moſt part exceedingly gentle in their diſpoſitions, and even ſometimes familiar in their manners, is the preſent ſpecies, which we have called the Green-and-yellow Viper, and which was firſt brought forward, to the notice of naturaliſts, by M. d'Aubenton, under the name of the common couleuvre *.

The green-and-yellow viper is very common in ſeveral of the provinces of France, particularly

* Couleuvre is a frenchification of the Latin Coluber, the ſyſtematic name of the genus; and for which we have no parallel term in Engliſh. The word viper is not perfectly legitimate; but, when a *beſt* cannot be had, the *next* muſt be reſorted to.—T.

particularly in the ſouth, where it is found abundant in woods, and in moiſt ſhady places. It ſeems confined to the temperate regions of the ancient world, as it has not hitherto been diſcovered in any of the warmer countries, nor in America; and certainly does not inhabit the north, as it is not noticed by the celebrated Swediſh naturaliſt Linnaeus. Green-and-yellow Viper.

This ſpecies is as perfectly innocuous as the adder or common viper is noxious. Its colours are brighter and more lively; it is conſiderably larger, more elegant in its proportions, more active in its movements, and more gentle in its manners, than the adder or common viper. Having no hollow moveable fangs, it has no venom, and therefore may be viewed with pleaſure as an object of beauty and curioſity, inſtead of being regarded with horror, as the venomous vipers. Inſtead of bringing forth its young quite formed, theſe do not break from the enveloping membranes of the eggs until ſome time after extruſion. Notwithſtanding

Green-and-yellow Viper.

ing all these dissimilitudes, between the viperous and venomous serpents of this genus, the green-and-yellow viper, from its external resemblance to these, has long been looked on as venomous; and has in consequence been unjustly persecuted and destroyed, as a noxious animal; and very few persons can persuade themselves to handle it, or even to look at it, without dread.

This species is easily distinguishable from all other serpents, and particularly from the venomous vipers, by its beautiful colours, which are pretty constant and regular. The top of the head is somewhat flattened. The eyes are surrounded by a row of golden yellow scales. The muzzle is rounded, the lips being covered with large yellow scales rather pale; of which there are twenty-seven on the upper jaw, and twenty on the lower. Usually the outer row of teeth in each jaw consists of thirteen on each side, and ten of each side in each jaw in the inner row; making in all ninety two small hollow transparent white and fixed teeth in both jaws.

The

The whole upper ſurface of the body, from the muzzle to the tip of the tail, is black or very dark green, covered all over with a great number of ſtripes, which are formed of ſmall yellow ſpots of various ſhapes, ſome elongated, others lozenge ſhaped, and ſo on; theſe are ſomewhat larger towards the ſides than on the back. The belly is yellowiſh; each of its large plates having a black dote at each end, and a very narrow black edge, forming on the whole along each ſide a very regular row of alternate dotes and ſmall black ſtreaks. Green-and-yellow Viper.

This beautiful viper uſually grows to the length of three or four feet, of which the tail is about a fourth part: When of this ſize, it is from two to three inches in its greateſt diameter. For the moſt part, the belly is covered by two hundred and ſix large plates, and the under ſurface of the tail by an hundred and ſeven pairs of ſmall plates. It even grows to a larger ſize than is here mentioned: And it can the more readily eſcape thoſe numerous accidents to

Green-and-yellow Viper.

which it is expoſed, as it can ſuſtain conſiderable wounds without deſtruction, and can live a long while without food.

It keeps for the moſt part concealed, as if conſcious of the neceſſity of fear for its ſafety againſt danger, and always endeavours to eſcape when diſcovered. It may, however, be ſeized without any riſk; for, beſides having no venom, it only makes repeated efforts to eſcape, without any attempts to bite.

After being taken, it becomes docile, and is ſuſceptible of being in a great degree domeſticated. It may be taught to perform a number of evolutions by ſignal; and we often ſee children tie vipers of this ſpecies by the tail, and make them creep along in any direction they chuſe. It allows itſelf to be twiſted round the arms or neck, to be rolled up in a ſpiral, and turned about or hung up in any way, without ſhowing any ſymptoms of anger or diſlike; and even ſeems pleaſed to be thus teazed and played with by its maſters. As its gentleneſs of

diſpoſition

disposition and want of venom are not generally known, even by the inhabitants of the countries which it frequents, mountebanks make use of it for amusing and imposing upon the people, whom they persuade that they possess secret arts for charming a venomous reptile into obedience to the slightest gesture. Green-and-yellow Viper.

Sometimes, however, and at certain seasons, the green-and-yellow viper, without however being in the smallest degree dangerous, evinces the desire, natural to all animals, of defending itself against aggression. When surprised in passing a road, or when, in the moment of hunger, about to seize its prey, if any one approach, it erects itself in a menacing posture, and hisses with anger or fear. But even then, there can be no reason for dreading a reptile totally destitute of venom, and whose power, and even teeth are only dangerous to lizards and other small animals on which it feeds. To man, it is only formidable through the force of imagination, ignorance, and prejudice.

Green-and-yellow Viper.

Wherever the winter cold is any way severe, this viper conceals itself, towards the end of autumn, in subterraneous holes or other retreats, where it remains in a degree of torpor through the winter. On the return of the fine weather of spring, it revives and casts its skin like other serpents. After getting a new skin, and having recovered its powers by the warmth of the season and abundance of food, it seeks out a mate; and at this season its amorous hissings may be heard among the grass. At this period its ardour seems considerable, as it will often attack such as disturb its intercourse. Warmth of attachment between the sexes is not surprising in an animal which is susceptible of very strong affection for those who have reduced it to a state of domesticity, and which has even been compared to those animals which have usually attributed to them the most powerful instinct.

Bomare, in his dictionary of natural history, relates an instance of familiarity and attachment,

attachment, in a viper which he calls the common French ſerpent, and which probably may be referred to this ſpecies. It was ſo fond of a woman who kept and fed it, that it often rubbed along her arms, as if to careſs her, concealed itſelf among her cloaths, or even in her boſom. It was even obedient to her voice, came to her when called, followed her continually, even ſeemed to know her laugh, and would turn to her as ſhe walked, as if waiting her orders. On one occaſion, Bomare ſaw her throw this faithful ſerpent into the water from a boat, as ſhe was floating down a conſiderable river; ſtill obedient to her voice, it endeavoured to ſwim after the boat; but, exhauſted with fatigue and the ſtrength of the waves, it was ſoon drowned. Green-and-yellow Viper.

Perhaps the Sardinian viper deſcribed by Cetti, under the name of colubro uccellatore, from its climbing trees, may be referred to this ſpecies. That viper is very common in Sardinia, where it preys on eggs and young

Green-and-yellow Viper.

young birds. Its back is of a black colour, variegated with yellow, and the belly is yellow. Its ordinary length is forty inches, and its largeſt diameter two inches. Its belly is covered by two hundred and nineteen large plates, and the under ſide of the tail by an hundred and two pairs of ſmall plates. Like our preſent ſpecies, it has no poiſon fangs, and conſequently is not venomous.

Sp. XXIX. *THE COLLARED VIPER* *.

Collared Viper.

THIS ſpecies is equally gentle, innocent, and familiar with the one laſt deſcribed, is found in the ſame countries, and

* C. natrix. Syſt. nat. ed. Gm. i. 1100. G. 125. Fn. ſuec. 288. It. gothl. 146. Amoen. ac. i. 116. n. 3. Gronov. muſ. ii. 63. n. 27. Zooph. n. 113. Weigel, Abh. i. 25. n. 29—38. Boddaert, nov. act. Caeſ. vii. 24. n. 30.—Natrix vulgaris. Laur. amph. 75. n. 149. —Natrix torquata. Raj. quadr. 334. Geſner, 63.—

Gemeine

and its manners and habits are in a great measure the same. It seems however to be fonder of moist or wet places, and even takes naturally to the water; from which latter circumstance it is called, by several naturalists, the water serpent, or the swimming snake. The collared viper sometimes grows to the length of three or even four feet. The head is somewhat flattened, and is covered by nine large scales in four rows; the first and second, beginning from the muzzle, of two each, the third of three, and the fourth of two. By this structure it is fully distinguished from the adder, which has only common scales on the head. It is likewise different in the muzzle, which is rounded in this species; while in the other it Collared Viper.

Gemeine Shlange. Meyer, i. 52–54. t. 89. 90.—Seba, mus. ii. pl. 4. f. 1. 2. 3. t. 10. f. 1. 2. 3.—Hydrus, Natrix, or Water-snake. Sibbald. scot. illustr.—Ringed snake. Brit. Zool. iii. 32. pl. 25. n. 13.—Colubro nero, Serpe nero, Carbon, Carbonazzo, Anguille-dé-haie.—Le Serpent à collier. Encyclop. Method.—Couleuvre à collier, in the original of this book.

Collared Viper.

it is terminated by a vertical ſcale. The throat, as in all ſerpents, is capable of great diſtention. Each jaw has two rows of ſmall hooked teeth, turned inwards, but without any fangs. On each jaw there are ſeventeen ſcales; thoſe on the upper jaw being whitiſh, with five or ſix ſmall dark coloured ſtreaks. Two pale yellow or whitiſh ſpots on the neck form a kind of half collar; from which circumſtance the trivial name here uſed is derived: And behind theſe are two triangular dark coloured ſpots. The ſcales on the back are oval, having a longitudinal ridge on each; while the ſcales on the ſides are ſmaller, and quite ſmooth. The whole upper ſurface is grey of different ſhades, and each ſide is marbled with black irregular ſpots of various ſizes, which reach to the edges of the large belly plates. Between theſe lateral rows of ſpots, two longitudinal rows of ſmaller and leſs diſtinct ſpots, extend from the head to the tip of the tail. The under ſurface is variegated with black, white, and bluiſh; the

black

black ſpots becoming more numerous nearer the tail, where the extreme plates are almoſt intirely black. Uſually there are an hundred and twenty large plates, and fifty three pairs of ſmall ones; though in ſome individuals we have ſeen ſixty pairs of ſmall plates*. Collared Viper.

Like the green-and-yellow viper, the collared viper is perfectly deſtitute of venom; it may be handled without danger, as it never attempts to bite, and only defends itſelf by a rapid motion of its tail. It may be kept in houſes; and becomes ſo familiar with thoſe who feed it, as to twiſt itſelf about their arms and necks at the ſlighteſt ſignal, and rubs itſelf gently upon them, as if to ſhew its affection and gratitude; and allows itſelf to be played with even by children. It is fond of bringing its mouth near that

* In Gmelins edition of the Syſtema Naturae the following variety in theſe plates are enumerated.—T.

170—60	174—62	170—64	172—58
144—58	175—63	170—52	170—68
172—58	174—54	168—48	

Collared Viper.

that of its keepers, and ſucking their ſpittle, and is particularly pleaſed to conceal itſelf under their cloaths. In Sardinia, according to Cetti, the young country girls frequently keep the collared vipers with great care, preparing their victuals, and even putting them into their mouths. The country people in that iſland, conſider it as a lucky omen when the collared viper enters their houſes; and would think they chaced good fortune from their doors, if they were to drive away theſe harmleſs creatures.

Sometimes, however, when very large and ſtrong, the collared viper, which has always remained in its wild ſtate, loſes ſomewhat of its gentleneſs; and particularly when diſturbed in the ſeaſon of love, or when about to ſeize its prey, it will raiſe itſelf up briſkly, agitating its forked tongue, ſhake its jaws violently, and will even bite the perſon who endeavours to ſeize it.

The female depoſits her eggs in holes fronting the ſouth, near ſtagnant waters; but more frequently in dunghills. Theſe

eggs

eggs are about the size of those of a magpie, and are joined together in a bunch by a gluey matter; in which they resemble those of fish, of frogs, toads, and lizards. From the circumstance of their eggs being often found in dunghills, has arisen the popular fable of these being the production of cocks, from which young serpents were hatched by the heat of the dung. It is alleged that, when the vipers eggs are put in water, such as are impregnated sink, while those that are addle swim. Collared Viper.

The outer membrane of their eggs is very thin, yet tough and firm. Within it the young viper is rolled up spirally, in the middle of a fluid which resembles the white of a fowls egg. The placenta and umbilical chord are very discernible, and the latter is fixed to the belly a little above the vent. The heat of the atmosphere, assisted by that produced by rotting dung or decayed vegetables, hatch the eggs. In the torrid zone, the power of the sun alone is perhaps sufficient. We have already observed,

that,

Collared Viper.

that, in the burning regions of Africa, the crocodile depoſits its eggs in the ſand; whereas, in the damp and cooler regions of America, they are placed in the middle of a heap of vegetable ſubſtances, that the heat which theſe engender in rotting may aſſiſt the growth and excluſion of the fetus.

Each female lays from eighteen to twenty eggs, ſometimes only fourteen or fifteen. Geſner writes that he got a female collared viper about the end of June, which produced fourteen eggs two days afterwards. This ſpecies would certainly be more numerous, were it not that in its young ſtate it becomes the prey of a number of enemies. The magpie, titmouſe, ſparrow, and other birds, devour the young ones; even frogs, on the authority of M. Sept-fontaines, frequently catch them on the edges of marſhy places.

The collared viper creeps on the ground with great quickneſs. It ſwims likewiſe, but much more difficultly than has been ſuppoſed, and only as a matter of neceſſity,

not

not choice; for it requires very great exertions, which ſoon wear it out, and it is even very ſoon drowned. Collared Viper.

In ſummer it frequents marſhy places, but is likewiſe found among thickets of bruſhwood. Sometimes it perches on the dry elevated branches of oaks, willows, maples, or other trees, or on the projections of old buildings, where it may be ſeen rolled up in different forms, or extending itſelf along, and baſking in the rays of the ſun, in which it ſeems to take great delight. Towards the end of autumn, it draws near to places in which it finds greater warmth, particularly near houſes, and conceals itſelf in holes fifteen or twenty inches deep, often at the roots of hedges, and always chuſes a dry elevated place, out of the reach of any inundations. Sometimes it takes poſſeſſion of the hole of a weaſel or a rabbit; and always paſſes the winter in a ſtate of torpor. M. Sept-fontaines ſays, that in January, February, and March, the whole

Collared Viper.

body is quite rigid, and it can only move the head and tip of the tail.

When full grown, its throat and ſtomach are capable of great diſtention; and, beſides vegetables, it feeds on ants and other inſects, on lizards, frogs, and mice. It ſometimes devours young birds, which it catches in their neſts, in the buſhes and hedges, on which it can climb very readily. It attaches itſelf to the branches, by the folds of its body; and even, taking advantage of its head being thicker than the neck, inſerts its head at the forks of the branches, and by that means draws up the reſt of its body.

Its ſmell is ſometimes very ſenſible, particularly to dogs. It is particularly fond of milk, and is ſaid to creep into dairies to drink the milk from the veſſels. It is even ſaid to twiſt itſelf round the legs of cows, to reach their udders, and even to ſuck them ſometimes till the blood follows. This fact is recorded by Pliny, but he refers it to a different ſpecies of ſerpent. It has been alleged, that the collared viper ſometimes

times creeps into the bodies of such as sleep on the grass, getting in either at the mouth or the anus; and that it may be made to come out again, by placing boiled milk near the apperture by which it entered, the smell of which entices it. Dr Fromman, a physician of Franconia, has published a long dissertation on this subject *, in which it would appear dangerous to make the serpent come back by the mouth, lest the patient should be choaked. Collared Viper.

The collared viper inhabits most of the countries of Europe, even in the colder regions, being found in Scotland and in Sweden. Cetti describes a serpent of Sardinia, which he calls the swimmer or water viper, which is probably of this species somewhat changed in its colours by the influence of the warmer temperature of that island. It is ash coloured, and variegated with black

* Memoire des Cur. de la Nat.—See likewise on this subject, Gesner, Taberna Montanus, Tragus, Olaus Magnus, Horstius, and even Hippocrates.

Collared Viper. and white ſpots; is about two feet long; and is not venomous.

In Gmelins edition of the Syſtema Naturae, the following varieties of this ſpecies are enumerated.

β. Natrix longiſſima: Of a blackiſh brown colour, with a few yellow dotes; the belly aſh coloured. Laur. amph. 74. n. 145.

γ. Natrix gernonenſis: The forepart of the head is variegated, having a ſhort black bar between the eyes, a very long black ſtripe on the hind head, two large ſpots on the noſe, and rows of ſmall ſpots all down the back which are yellow in the centers; towards the tail the ſpots become confuſed. Laur. amph. 76. n. 153.

δ. Natrix maculata: Having a bright yellow ſpot on the hind head, and ſeveral others on the back. Meyer Thierre. i. t. 87. 88.

ε. Natrix caerulea: Of a blue colour, with

with black dotes, and waved tranſverſe black lines. Collared Viper.

ζ. Natrix caerulea: Of a blue colour, with a narrow white ſtripe thinly ſpotted with black on each ſide; the belly white with one black ſpot on each ſide.

Sp. XXX. *THE SMOOTH VIPER* *.

THE ſmooth viper is ſo named, on account of its back ſcales having no ridges; by which, among other circumſtances, it is readily diſtinguiſhed from the laſt deſcribed ſpecies; with which it agrees in ſeveral other reſpects, being of the ſame ſize and conformation, equally harmleſs, and very common in the ſame countries of Europe. It is particularly numerous about Vienna in Auſtria, where it was obſerved Smooth Viper.

* C. auſtriacus. Syſt. nat. ed. Gm. i. 1114. G. 125.—Coronella auſtriaca. Laur. amph. 84. n. 178. t. 5. f. 1.—La Liſſe, in the original.

Smooth Viper.

and very well described by Laurenti. It is found in some of the southern provinces of France, and we have seen a specimen in the collection of M. Antic. As we were not aware of this circumstance, until after the dissertation on the nomenclature of serpents was printed off, this species is not there enumerated among the serpents of France. The country people frequently confound the smooth viper and the collared viper with each other, or consider the former as a mere variety of the latter: Probably led into this error, by having sometimes observed them coupled together; but they are certainly different species, and easily distinguished, particularly by the difference of their back scales.

The top of the head of this species is armed with nine bright smooth plates, or large scales, in four rows, as in the collared viper, and the green-and-yellow viper. The eyes are flame coloured, and are situated in the middle of a dark brown bar, which reaches from the corner of the mouth,

mouth, on each ſide, to the muzzle. The ſcales covering the lips are bluiſh. On the back of the head there are two pretty large deep yellow ſpots; and behind theſe, to the tip of the tail, are two rows of ſmaller ſpots, which are placed oppoſite to the intervals of each other. The general colour of the back is bluiſh, with a reddiſh tinge at the ſides, where there are likewiſe a few ſpots. The plates on the belly and tail are very ſmooth, highly poliſhed, and almoſt tranſparent; of a whitiſh colour, with ſome reddiſh ſpots, which are larger towards the vent. In young ſpecimens, the whole under ſurface is ſometimes a bright browniſh red. The belly has uſually an hundred and ſixty-eight large plates *, and the under ſurface of the tail forty-ſix pairs of ſmall plates. Smooth Viper.

The ſmooth viper is moſtly found in ſhady vallies, and ſeems to prefer marſhy places. In the wild ſtate, it is eaſily irri-

* In the ſyſtematic catalogue, the belly plates are ſet down as an hundred and ſeventy-eight.—T.

Smooth Viper.

tated; but, when taken young, is very readily made tame, familiar, and obedient. Having no bad flavour, at leaſt in our European mild climates, thoſe who are aware of its innoxious qualities have no objection to its frequenting their houſes. As it has no moveable fangs, it is intirely deſtitute of venom; which Laurenti verified, by cauſing it to bite dogs, cats, and pigeons.

It not only inhabits Europe, but is found in the Eaſt and Weſt Indies, from the former of which a ſpecimen was ſent to the royal collection. Laurenti very properly conſiders the viper repreſented by Seba, Vol. I. pl. 52. f. 4. as a variety of this ſpecies*; from which it only differs in the back being red, which may have been occaſioned by the ſpirits of wine in which the ſpecimen was preſerved. We ſhould have conſidered

* This individual of Seba, is conſidered as a diſtinct ſpecies in the Syſtema Naturae; where it gets the name of C. ruber: It will be found, as ſuch, at the end of this genus, among the ſpecies added by the tranſlator from Gmelin.—T.

considered the viper mentioned by Gronovius, No. 22. and figured by Seba, Vol. II. pl. 33. f. 1. as a variety of the smooth viper, with which it has many resemblances. But Laurenti, who has examined the smooth viper alive, expressly assures us that it is quite different *. Smooth Viper.

Cetti mentions a viper of Sardinia, under the name of vipera di secco, or earth viper, which is perhaps a variety of this species. It is very much dreaded by the natives, although not venomous, as it has no poison fangs. It is above thirty inches long. The back is spotted with black, as in the common viper, and the belly is blackish.

Sp.

* The one here alluded to, is made a distinct species, both here and in the Systema Naturae, under the trivial name of Arabian viper.—T.

Sp. XXXI. *THE FOUR-STRIPE VIPER**.

Four-ſtripe Viper.

WE have adopted this trivial name for a viper which was ſent from Provence to the royal cabinet. The upper part of the body is whitiſh, or buff, with four narrow dark coloured lines which extend its whole length. The two outer lines extend themſelves above the eyes, and ſwell out behind them into a long black ſpot on each ſide of the head; beyond the eyes, theſe two lateral lines meet above the muzzle. The top of the head is armed with nine large plates or ſcales in four rows. The ſcales on the back are ridged, but thoſe on the ſides are plain. The ſpecimen in the royal cabinet, is three feet nine inches long, of which the tail meaſures eight inches and a half. The belly has two hundred and eighteen large plates; and the under ſurface of the tail ſeventy-three pairs of ſmall

* La Quatre-raies, in the original.

D.Lizars Sculpt

1.Four Stripe Viper. Sp. 31. 2. Roman Viper. Sp. 32.

small plates; behind these are two pairs of small plates, interposed between the vent and the belly plates. We are ignorant of the habitudes of this species; but as it resembles very nearly, in its conformation, the genus *Coluber*, viper, and is found in the same countries, their manners in use are probably very much the same.

Trans-verse viper.

THIS snake, which may also be termed the *Elaphis*, has been described by Daudin, but only from specimens of young ones. It is found in Carolina, and is very common in the southern parts of that country. We have, however, received no

Elaps viper.

small plates; besides these, there are two pairs of small plates, interposed between the vent and the belly plates. We are ignorant of the habitudes of this species; but as it resembles very much, in its conformation, the green-and-yellow viper, and is found in the same countries, their manners of life are probably very much the same. Four-stripe Viper.

Sp. XXXII. *THE ROMAN VIPER**.

THE term, Esculapian viper or serpent of Esculapius, has been given to several different species of serpents, by travellers and naturalists; having been applied both to serpents of Europe and of America. We have, however, reserved it for this Roman Viper.

* Le serpent d'Esculape.—Παρεια.—Anguis Æsculapii, Ray, Synop. 291. It is a pity to use parallel names, as the same trivial is employed in the Systema Naturae for a different species, called in this work the Black-bar viper; the translator has therefore chosen a different trivial name, which the reader is requested to alter in the systematic catalogue.—T.

Roman Viper.

this ſpecies, which is found in the neighbourhood of Rome, and which has probably preſerved this appellation for more than eighteen centuries; as if the innocence and gentleneſs of its manner had occaſioned it to be choſen, as the appropriate ſymbol of a beneficent Deity, often depicted by the ancients under the emblem of a ſerpent. As the ſpecimen in the royal collection came from the neighbourhood of Rome, we are convinced the deſcription we now mean to give belongs to the Eſculapian ſerpent of the ancient Romans; and ſhall not therefore apply this term either to the viper which gets this name from Linnaeus, or to ſeveral others ſo named by Seba.

The head of this ſpecies is tolerably large in proportion to its body, and is armed with nine large plates in four rows. The ſcales on the back are oval and ridged, but thoſe on the ſides are plain. The general colour of the body is reddiſh of different degrees of brightneſs, and the ſides are divided from the belly by a dark ſtripe on each ſide.

The

The row of ſcales neareſt the belly plates are white, their edges neareſt the plates being black; which, with the longitudinal black line, forms a row of ſmall white triangles along each ſide. The belly is whitiſh, with dark ſpots; having an hundred and ſeventy-five large plates, and ſixty-four pairs of ſmall plates on the under ſurface of the tail. In our ſpecimen the total length was three feet ten inches, of which the tail meaſured nine inches and a quarter. Roman Viper.

This ſpecies has great reſemblances in many reſpects with the green-and-yellow, the collared, the ſmooth, and the four-ſtripe vipers; and is equally gentle and innocuous with them, perhaps even more familiar in its manners. It is found in moſt of the warm and temperate regions of Europe, as France, Spain, and Italy, and is particularly common in the environs of Rome. It allows itſelf to be careſſed and handled by children; and is one of thoſe which are employed by mountebanks to impoſe on people a belief of their ſupernatural power

over

Roman Viper.

over the moſt dangerous reptiles. It is fond of being near inhabited places; glides frequently into the houſes, and even ſometimes ſlips into the beds. In its other habits, it very much reſembles the ſeveral ſpecies of harmleſs vipers juſt deſcribed.

M. Faujas de Saint-Fond had the goodneſs to ſend me the caſt ſkin of this viper, which was found on one of his eſtates near Montelimart in Dauphiny. As this was remarkably intire, and we ſeldom ſee any ſo well preſerved, we examined it with great attention, as it gives a moſt perfect idea of the manner in which this particular ſerpent, at leaſt, had operated to get red of its old ſkin; and having compared a great number of obſervations on this ſubject, we have reaſon to ſuppoſe that all ſerpents act in nearly the ſame manner.

Our firſt inquiry was, to what ſpecies the caſt ſkin had belonged. It was evidently belonging to the viper genus, and had an hundred and ſeventy-ſix large plates, and eighty-nine pairs of ſmall plates. As the

green-

green-and-yellow viper has uſually two hundred and ſix large plates, and the four-ſtripe viper two hundred and eighteen, I could not refer this caſt ſkin to either of theſe; more eſpecially as the four-ſtripe ſpecies has two pairs of ſmall plates between the large plates and the vent, and the caſt ſkin under examination had only one pair of theſe. The ſmooth viper and the collared viper appeared to have too little reſemblance with this caſt ſkin, to allow me to attribute it to either of theſe: The former of theſe has an hundred and ſeventy-eight large plates and forty-ſix pairs of ſmall ones; while the latter has uſually an hundred and ſeventy large, and ſixty pairs of ſmall plates. Hence of all the vipers of France, the Eſculapian was the only ſpecies to which I could refer the caſt ſkin. It certainly reſembles that ſpecies conſiderably, in the number of large and ſmall plates, in the form of the back ſcales, and thoſe on the ſides, the top of the head and the jaws, in the proportions of its different parts, and in ſize. Its total length

Roman Viper.

Roman Viper.

length was four feet five inches, of which the tail measured twelve inches and a third. We could not compare the colours of this cast skin with those of the Esculapian viper, as it was exceedingly thin, quite dry, transparent, and colourless. However, the principal object of curiosity was not the determination of the particular species to which the cast skin had originally belonged, but to ascertain by its means the manner in which the serpent had contrived to get rid of it.

The skin, although perfectly intire, was turned completely inside out. It had been evidently first detatched at the head; as there was no other place from which the serpent could have crept, except the opening of the mouth. The film had first separated at the lips, keeping always fixed to the scales of the neck and head. These separated next, and, turning backwards, left the head of the serpent covered only by the new skin. In this manner, the whole old skin, including even the outer film

film of the cornea and of the eyelids, turns gradually inside out, like the finger of a glove; and, by continued efforts, the animal at length creeps out of it. In this turned out sheath, the form of every scale, even that of the eyes, may be distinctly seen; only, in every part reversed, hollow where it was prominent on the animal, and the contrary. The scales come off entire, along with the epidermis to which they were attached, which forms a kind of frame around each scale and plate. This frame does not exactly follow the outline of each scale or plate, but only remains attached to that part of each which was originally fixed to the skin. These different frames of epidermis form together a species of net work, less transparent than the scales and plates, which are seen filling up all the intervals, like so many facets and thin plates, almost perfectly transparent. Roman Viper.

By twisting about in different directions, rubbing itself against the ground, and against such objects as come in its way, the

Roman Viper.

ſerpent at length ſucceeds in getting itſelf diſembarraſſed of its old covering, which ſtill continues to turn inſide out, in proportion as it gets backwards; till at laſt it ſeems like another ſerpent which has ſwallowed the real one, only the tail of which appears out of its mouth. At the laſt, the ſerpent and its old ſkin, now almoſt detached, ſeem two ſerpents united by the ends of their tails; which at length become diſengaged, but the extreme ſcale does not turn out. This manner of getting off the old ſkin, reſembles a good deal what has been already related reſpecting the lizards. The caſt ſkin, of which we have juſt treated, has been depoſited in the royal cabinet.

Sp.

Sp. XXXIII. *THE VIOLET VIPER* *.

WE give this name to an innoxious viper in the royal collection. It has two rows of common teeth in each jaw, but no poiſon fangs. The top of the head is armed with nine large ſcales in four rows. The ſcales of the back are lozenge ſhaped and plain, and of a violet colour of different ſhades. The under ſide of the body is whitiſh, with pretty large irregular violet ſpots, which are placed alternately on the right and left ſide, the ſpots on one ſide being oppoſite to the intervals of the other. The ſpecimen from which this deſcription is made, meaſures one foot five inches and a third, of which the tail is two inches and a third. The belly has an hundred and forty-three plates, and the tail twenty-five pairs on its under ſurface. Violet Viper.

* La Violette.

Sr. XXXIV. *THE HALF-COLLAR VIPER* *.

Half-collar Viper.

THERE is a ſpecimen of this ſpecies in the royal collection, which was ſent from Japan †, under the name of *Kokura*. It is one foot ſeven inches in length, of which the tail is four inches and ten lines. It has no poiſon fangs, and is accordingly not venomous. The top of the head is armed by nine large ſcales ‡ in four rows. Thoſe on the back are lozenge ſhaped, and have each a ſmall longitudinal ridge. In our ſpecimen, there are an hundred and ſeventy

* C. monilis. Syſt. nat. ed. Gm. i. 1103. G. 125. Muſ. de Geer.—Le Collier. Encyclop. Method.—Le Demi-collier, in the original. Perhaps it had better been named, from the Latin trivial, the necklace viper.—T.

† In the Syſtema Naturae, it is ſaid to inhabit America.—T.

‡ This circumſtance is not well expreſſed in the accompanying plate, which is faithfully copied from the original.—T.

seventy plates on the belly, and eighty-five pairs on the under surface of the tail. In the individual described by Linnaeus, from the museum of M. de Geer, there were only an hundred and sixty-four of the former, and eighty-two pairs of the latter. Half-collar Viper.

The colours of this viper are very agreeable. The general colour of the back is brown, with narrow transverse whitish belts, having edges of deeper brown than the ground colour. The top of the head is white, edged with brown, and having three longish brown spots. It is particularly distinguishable by means of three round white spots, directly behind the head, which form a kind of half collar or necklace, from which the trivial name is derived. This species is found both in Japan and America.

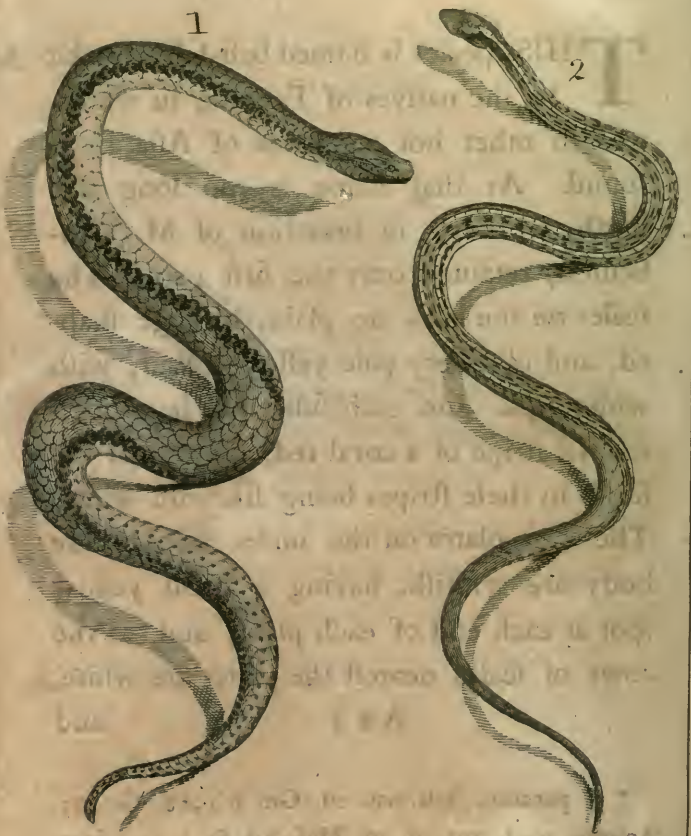
Sp. XXXV. *THE LUTRIX* *.

Lutrix.

THE colours of this viper are few, but agreeably disposed, simple, and bright. The upper and under surfaces are yellow, and the sides blue. Linnaeus, who first describes it, says that it is found in South America, and in India, and does not consider it as venomous; but we are ignorant of its native habitudes. It has an hundred and thirty-four large plates, and twenty-seven pairs of small ones.

Sp.

* C. Lutrix. Syst. nat. ed. Gm. i. 1086. G. 125.—Le Lutrix. Encyclop. Method.



1. Bali, Sp. 36. - 2. Lady Viper, Sp. 37.

Sp. XXXVI. *THE BALI* †.

THIS ſpecies is named bali-ſalan-boekit by the natives of Ternate, in which, and in other hot countries of Aſia, it is found. As that name is too long and harſh, we have, in imitation of M. Daubenton, retained only the firſt part. The ſcales on the back are plain, lozenge ſhaped, and of a very pale yellow colour, with white tips. On each ſide there is a longitudinal ſtripe of a coral red, the tips of the ſcales in theſe ſtripes being likewiſe white. The large plates on the under ſide of the body are whitiſh, having a ſmall yellow ſpot at each end of each plate; and, as the rows of ſcales neareſt the plates are white, Bali.

* C. plicatilis. Syſt. nat. ed. Gm. i. 1088. G. 125. Amoen. ac. i. 301. n. 26. Muſ. Ad. Fr. i. 23. Seba, Muſ. i. t. 57. f. 5.—Ceraſtes plicatilis. Laur. amph. 81. n. 168.—Le Bali. Encyclop. Method.

Bali. and each of them marked with a yellow ſpot, the whole under ſurface has four longitudinal rows of yellow dotes, of different ſhades, which very beautifully ſet off the general white colour of the belly; and, with the red ſtripe on each ſide, very completely diſtinguiſh this ſpecies. The ſmall plates under the tail are likewiſe white, and are each marked by a yellow ſpot, forming two rows ſimilar to thoſe on the belly.

This ſpecies grows to a conſiderable ſize, as the ſpecimen in the royal collection is ſix feet and a half long. It has uſually an hundred and thirty-one large plates, and forty-ſix pairs of ſmall plates. The top of the head is armed with nine large ſcales in four rows. We know nothing of its habitudes.

Sp.

Sp. XXXVII. *THE LADY VIPER* *.

Lady Viper.

THIS is at the ſame time one of the gentleſt and moſt beautiful of ſerpents. Its proportions are more elegant and delicate than in moſt others; its motions are nimble, though moderate, and augment the pleaſure which is produced by the beautiful mixture of its fine colours. Theſe however are only two, a fine black and pure white; but they are ſo agreeably intermixed and contraſted, and ſo bright, from the high poliſh of the ſcales, that they pleaſe the eye more, by their ſimple elegance, than thoſe more rich and brilliant colours of other ſpecies, which are often too ſplendid and dazzling.

The

* C. domicella. Syſt. nat. ed. Gm. i. 1088. G. 125. Amoen. ac. i. 117. n. 5. Seba, Muſ. ii. t. 54. f. 1.—Serpent des Dames. Encyclop. Method.—Couleuvres des Dames, in the original.

Lady Viper.

The general colour of the whole body is white, with rings of black on the whole upper ſurface, which reach to the ends of the white belly plates, but grow narrower as their ends recede from the back, and moſt of them unite with a longitudinal blackiſh line which runs along the middle of the belly. This line and the tranſverſe rings are irregular, and ſomewhat feſtooned, which adds much to the elegance and variety of the ornament. The top of its ſmall head is beautifully variegated with black and white, the black predominating. The eyes are very ſmall and ſurrounded with black, which augments their luſtre. According to Linnaeus, this ſpecies has an hundred and eighteen large plates, and ſixty pairs of ſmall plates.

This ſpecies is very familiar. It never attempts to eſcape from mankind, nor does it even ſhew any ſigns of fear when approached. It ſeems remarkably ſenſible to the degree of cold which ſometimes prevails in the hot climates which it inhabits, on which

which account it ſeeks for warm ſituations; and, as the ſmallneſs of its ſize, its weakneſs, the beauty of its colours, the gentleneſs of its movements, and innocence of its diſpoſition, inſpire a fondneſs for it in the Indians, even the females, far from having the leaſt fear of it, take it in their hands, careſs and cheriſh it. The ladies in Malabar, where it is very common, and in many other parts of India, are careful to warm this delicate little ſerpent, when it appears languid, during the cool weather of the rainy ſeaſon. They place it in their boſoms, without any dread, nay even with apparent pleaſure; and it ſeems perfectly ſenſible of their kindneſs. On the other hand, during the hot ſeaſon, theſe ladies are equally fond of this viper, which they fondle for the purpoſe, in their turn, of being refreſhed by the contact of its ſkin, which is ſo ſmooth as always to feel cool. Lady Viper.

When, in our temperate regions, the ladies incline to communicate warmth to their delicate limbs, they have recourſe to animals

Lady Viper.

animals of greater ſenſibility, which are even more faithful, and are more fitted for expreſſing the force of their attachment. But when the European ladies deſire to moderate unpleaſant heat, inſtead of having recourſe to the careſſes of cold blooded animals, like the Indians, they employ inſenſible ſubſtances, ſuch as pieces of poliſhed marble, glaſs, or metal. Our ladies cannot ſee without terror the gentle and inoffenſive ſerpents of our regions; while in India, where there are multitudes of ſerpents that are terrible, either by their ſize and ſtrength, or by their deadly venom, the dread, which theſe ſo properly produce, is never transferred to weak and innocent ſerpents, ſuch as the lady viper.

SP.

Sp. XXXVIII. *THE CHUBBY VIPER* *.

LINNAEUS gives the only account of this viper, which is found in South America and India. The head is white, with two ſmall reddiſh ſpots on the crown, and a triangular reddiſh ſpot on the muzzle. The back is white, and almoſt covered by very broad double brown ſpots. The head is broad, triangular, flatted on the top, and compreſſed at the ſides; being covered before by nine large ſcales, three of which between the eyes are very large, the hinder part of the jaws projecting much on each ſide. It has an hundred and ſeven large plates Chubby Viper.

* C. buccatus. Syſt. nat. ed. Gm. i. 1089. G. 125. Muſ. Ad. Fr. 29. t. 19. f. 3. Laur. amph. 95. n. 209. —Le Triangle. Encyclop. Method.—La Jouſlue, in the original. Though placed here, among innoxious vipers, it has the mark of being venomous in the Syſtema Naturae.—T.

Chubby Viper.

plates on the belly, and seventy-two pairs of plates beneath the tail.

Sp. XXXIX. *THE WHITE VIPER**.

White Viper.

AT first sight this species may very readily be confounded with the snowy viper formerly described, Sp. 20; as both of them are of a very beautiful white, without any spots: But with the smallest attention they will be easily distinguished from each other. The white viper, now under consideration, has only an hundred and seventy large plates, and twenty pairs of small ones; while the snowy viper has two hundred and nine of the former, and sixty of the latter. We have often, it is true, informed the reader, that the number of these plates of both kinds is by no means regularly

* C. albus. Syst. nat. ed. Gm. i. 1093. G. 125. Mus. Ad. Fr. i. 24. t. 14. f. 2.—Le Blanc. Encyclop. Method.—La Blanche, in the original.

larly conſtant; but we have never known them to vary ſo very much as this difference, in any ſpecies of ſerpent. Beſides the white viper has no poiſon fangs, while the ſnowy viper is poſſeſſed of very active venom. Thus their properties even differ more than their conformation; and theſe properties are too diſſimilar to admit of their habitudes being the ſame. The ſnowy viper is found in Africa, while the white ſpecies is found in India: Linnæus ſays likewiſe in South America. White Viper.

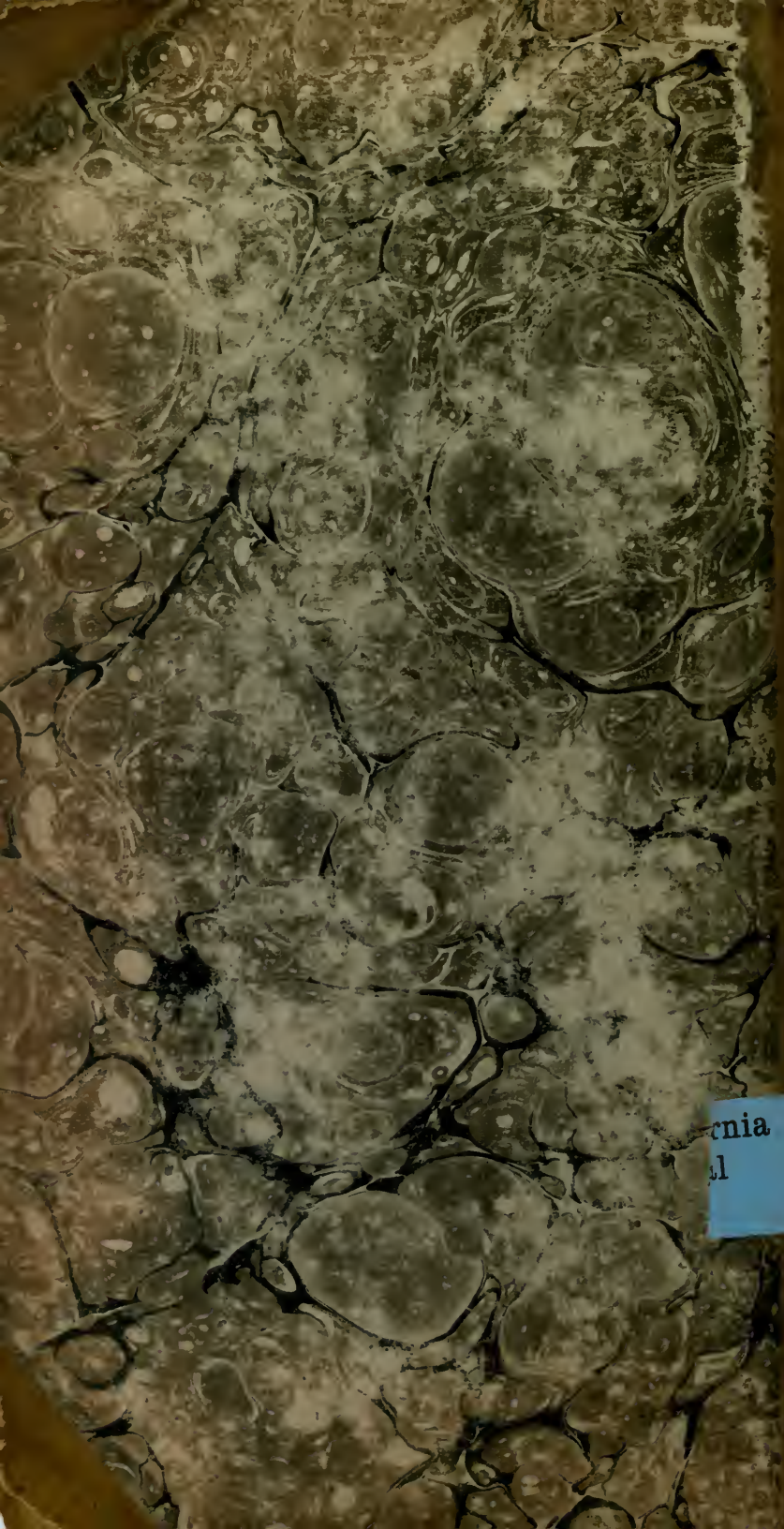
END OF THE THIRD VOLUME.

UCSB LIBRARY
X-24862

University of California
SOUTHERN REGIONAL LIBRARY FACILITY
305 De Neve Drive - Parking Lot 17 • Box 951388
LOS ANGELES, CALIFORNIA 90095-1388
Return this material to the library from which it was borrowed.

OCT 10 2005

UC SOUTHERN REGIONAL LIBRARY FACILITY
A 000 496 085 2


cnia U
ll